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JANUARY 1958

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# FOOD ENGINEERING

A McGRAW-HILL PUBLICATION

FOR MANAGEMENT
IN MANUFACTURING,
PACKAGING, MARKETING

## TOP EXECUTIVES LOOK AT '58

SEE FE REPORT PAGE 149

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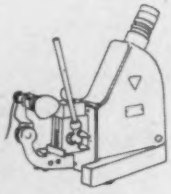

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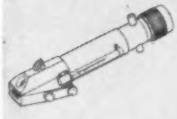

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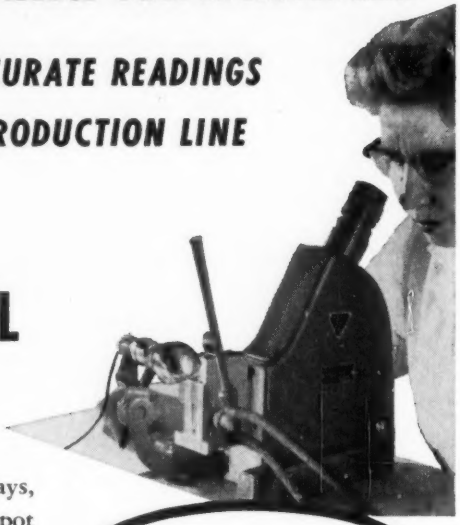

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For information about W&T In-Plant Chlorination send for Bulletin #I-58.

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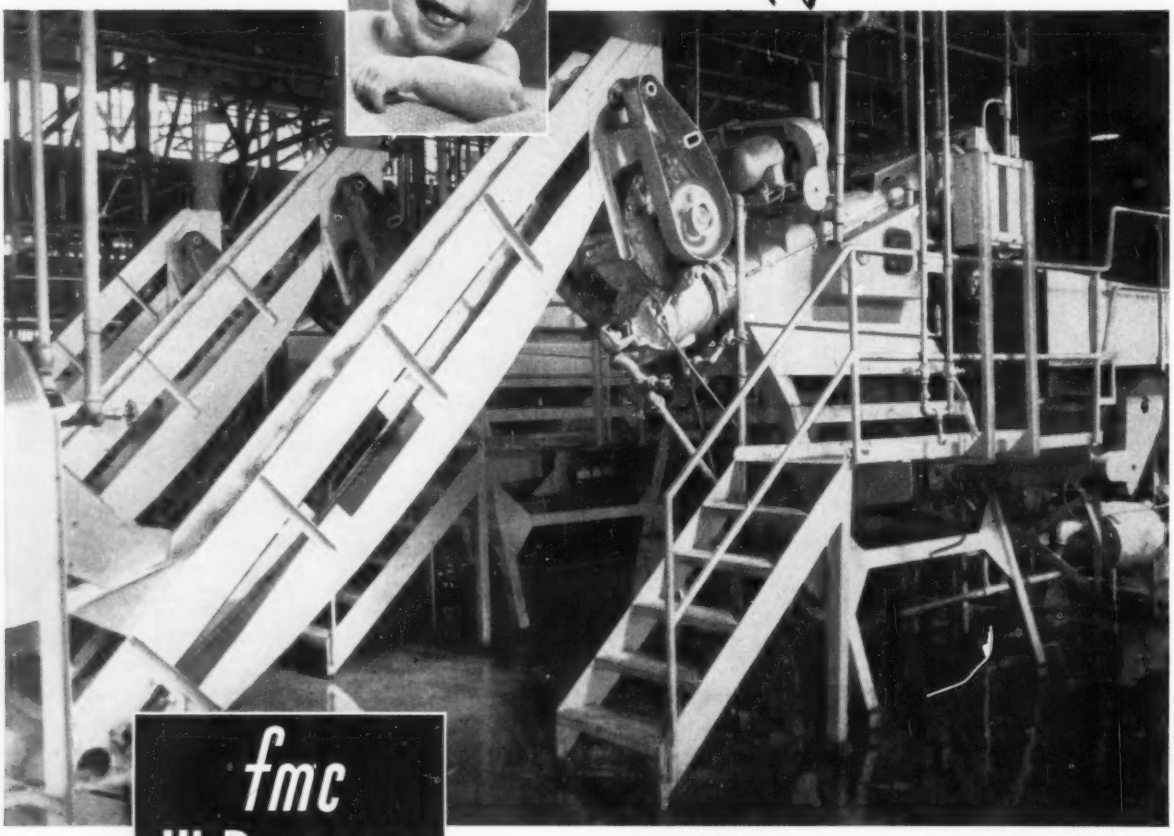
# Gentle as a to baby foods



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# TRENDS & FORECASTS

SPECIAL
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**Sales of manufactured foods will increase 5 to 7% this year,** according to predictions of top executives contacted by FE. Business costs may rise 2%. Advertising budgets will go up 3% from $1.1 billion in '57.

**Food sales hit a record $75 billion in 1957, GMA reports.** And the figure is expected to reach $79 billion this year. Ten years ago, expenditures for food totaled only $46 billion. Looks like a growth industry.

**Net profit rate in '57 averages 2.6 cents per dollar of sales** for a group of 89 leading grocery manufacturers. A year earlier it was 2.9 cents.

**Hourly wages of production workers in food manufacturing rose 11 cents** last year, to a high of $1.94, and upward trend will continue. Rail freight rates were hiked 9 to 14% during the year.

**Margarine production exceeded one billion pounds for the first 9 months** of 1957 for a new record. Consumption of the product in the second quarter was 1.9 lb. per capita, 49% higher than the purchase rate for butter.

**Instant coffee sales have increased eight times faster than** sales in the food business as a whole. And it accounted for 20.1% of total coffee business in third quarter of '57, compared to 17.7% a year earlier.

**Bread tonnage is running 10% above 1954, compared to a 6% population** gain. Per capita flour consumption, however, has been dropping.

**World centrifugal sugar consumption increased 8.5% in year** ending at mid-1957, totaling 41,539,000 metric tons. Production was 41,031,000 tons, up 5.8%. For 1957-58, output is put at 47,700,000 tons.

### Sees Business OK in '58

"O.K." summarizes the economics outlook for the USA in 1958. That's how it looks to Dexter M. Keezer, McGraw-Hill's director of economics.

We are not going to have a boiling boom in 1958. We never have had when business investment in new producing facilities is declining, as it will be to some degree next year. In fact, for the year as a whole we will fall short by $10 to $15 billion of getting as much produced and distributed as we should.

But the government will keep on spending at a rate, and our well-heeled consumers—millions of them fortified by another round of wage increases—will keep on buying at a rate to sustain a high level of general prosperity.

Indeed, in spite of sagging in some of its key elements, such as industrial production and consumer income, final tabulation of the record of business as a whole (the gross national product) may fail to show that the much heralded recession of late 1957 ever took place at all. Thanks in part to some expansive statistic keeping, the g.n.p. (about $435 billion this year) may well keep right going on up, quarter by quarter.

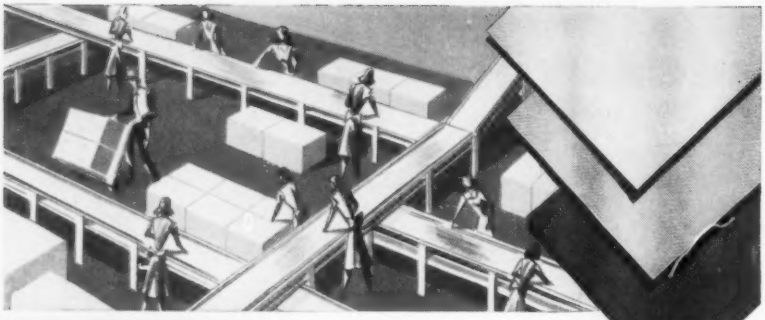
### Up-Turn at Mid-Year

But recession or no—and there is some recession in some very important and sensitive spots—by next Memorial Day, or it could be a little later, we will be pretty well engulfed by a powerfully rising tide of business.

In 1958, we can have all the missiles and cannons we can possibly use, and butter too.

There is no escape from the prob-

See Developments to Watch p. 17



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## Trends & Forecasts

lem of coping successfully with abundance all along the line. And, paradoxically enough, it is anything but a simple problem.

### Frozen Food Packs Drop

Decreases are reported in the 1957 packs of several frozen fruits and vegetables, an increase for one, and a trend to larger package sizes. All in all, the trends look good for the field, which has suffered from price-cutting abundance.

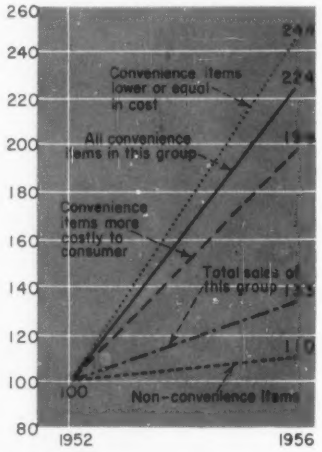
The frozen peach pack of 43,190,606 lb. reported by National Association of Frozen Food Packers, is down 5%. And particularly significant is that the retail pack is less than half of last year's. Trend to 32 lb. industrial container continues.

Down 18% from last year, the pack of frozen green peas totals 293,143,162 lb. And some 40% of the pack is in large institutional sizes (50, 55, 60 lb.).

For frozen cut corn, the pack is about 6 million lb. below last year, or 112,201,599 lb., with considerable increase in large containers.

Frozen asparagus is down 20% to 30,110,519 lb., with 70% in retail and 30% in institutional packages. Spring spinach dropped 8% to 74,808,622 lb.

But a sharp increase of 47% is represented in the frozen RSP cherry pack of 130,888,750 lb. About 95% is in 30-lb. tins, as in the past.




CONVENIENCE FOOD sales trend curves tell significant story. Dollar sales of convenience items that were lower or equal in cost increased about 2½ times in a few years. Sales doubled even for items more costly to consumers. (Source: Nielson Food Index)



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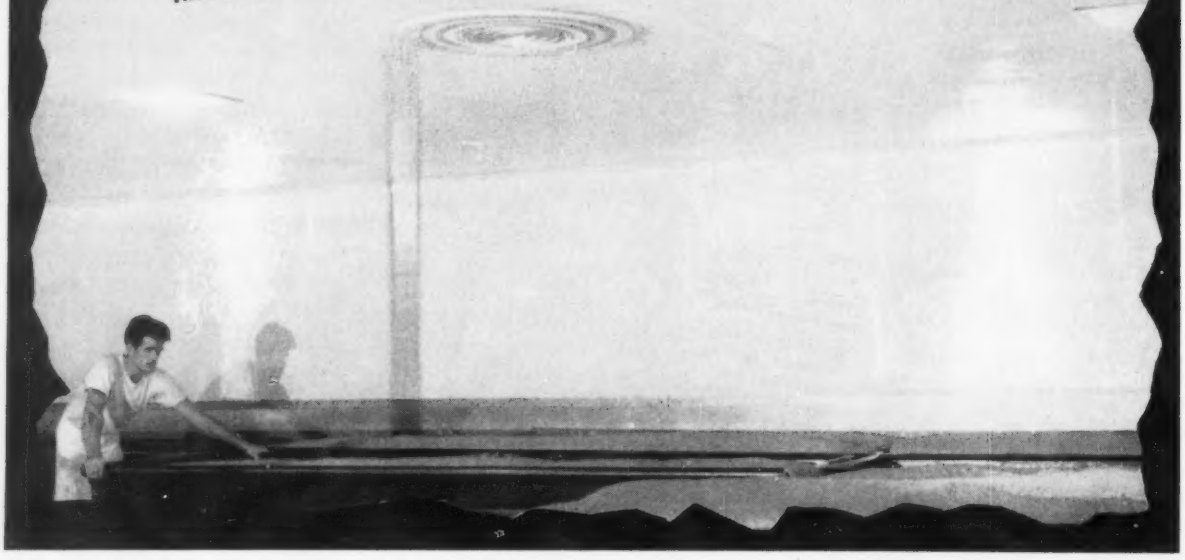


## Trends & Forecasts

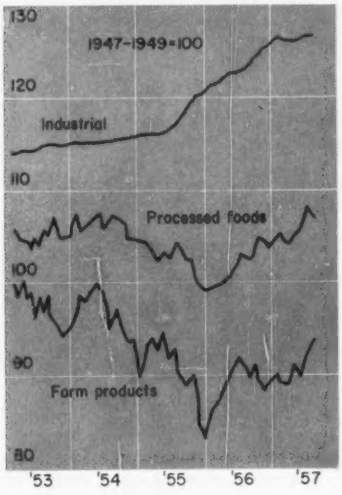
### Severe Labor Shortage Seen

To provide for a U.S. population of some 200,000,000 in 1965, at least 10,000,000 more workers will be needed. That is the forecast of the Department of Labor, and it takes into account the more productive machinery being introduced.

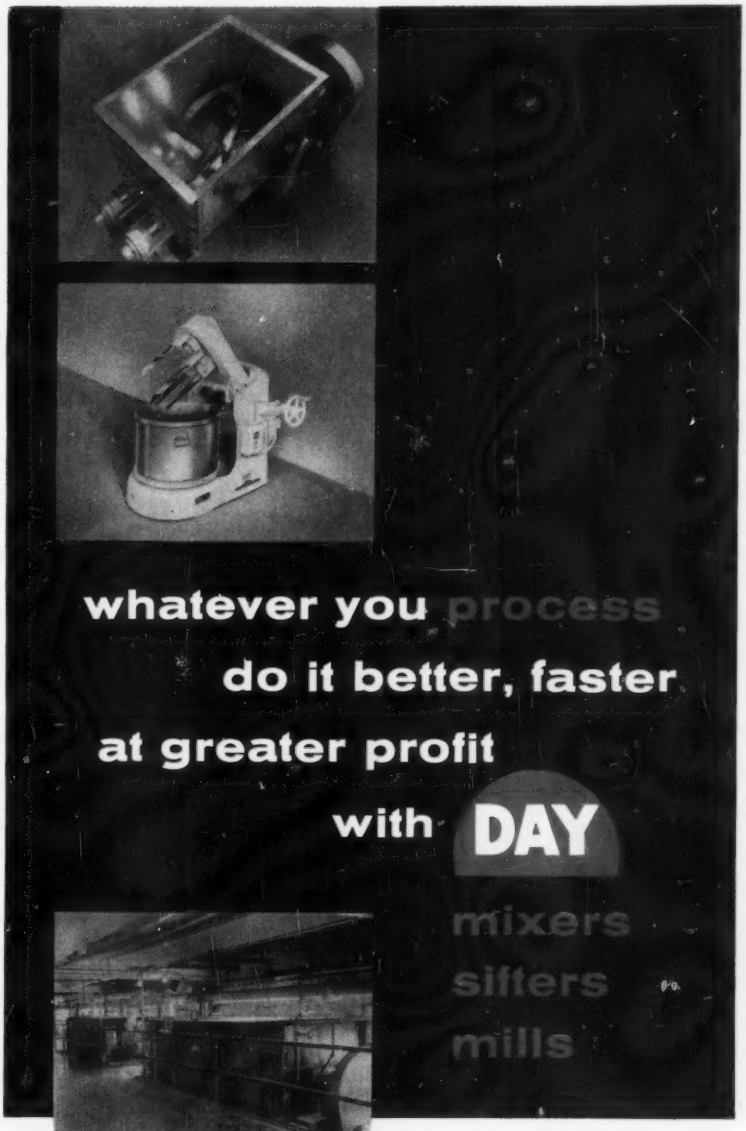
The coming shortage is made even worse by the consideration that there will not be any increase in the number of young men in the 25 to 44 age range.

One of the more serious labor bottlenecks is an expected serious shortage of craftsmen and skilled operatives. Some 5,000,000 more will be needed in the next eight years. Yet even now there are 28% fewer people under 25 enrolled in training programs than there were in 1951.

This labor outlook spells good for food manufacturers in one way, trouble in another. The fact that total worker income will be much higher means more money to buy quality and convenience foods. The likelihood that a higher percentage of women will be working calls for food products with still more built-in maid service. But the shortage of help means that food plants will have to be highly mechanized and automated. And this, in turn, will require that our plants train more skilled workers.




**WHOLESALE PRICE** index curves show quite different trends for processed foods and farm products, as compared to industrial index. Cost of living would have been much higher had processed food prices not declined and then remained relatively low despite wage and other cost increases (Source: Bureau of Labor Statistics)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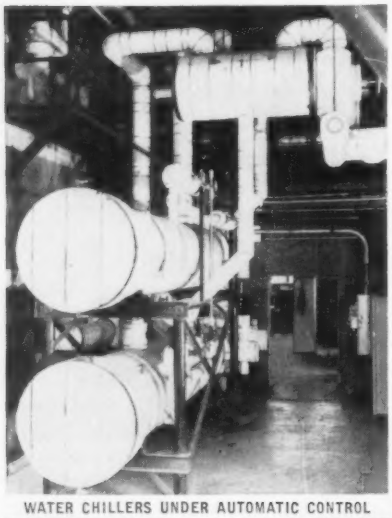
## *LIKE* Frick Refrigeration

And use ten big Frick ammonia compressors, plus numerous condensers and coolers, in their famous plants at Canajoharie, N. Y.

For process work, air conditioning, and cold storage, Beech-Nut Life Savers find Frick Refrigeration an indispensable aid.

Recent installations made by Mollenberg-Betz Machine Co., Frick Sales-Representatives at Buffalo.

Let us aid you in applying modern refrigeration and air conditioning to your business. Estimates cheerfully furnished, without obligating you.

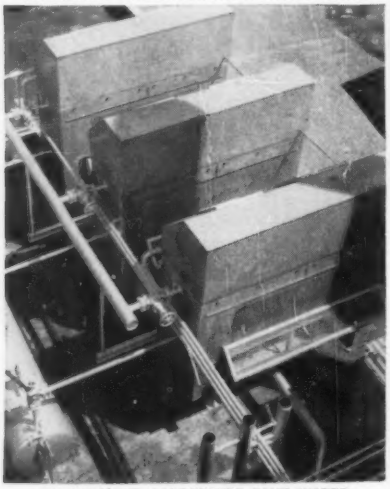


WATER CHILLERS UNDER AUTOMATIC CONTROL

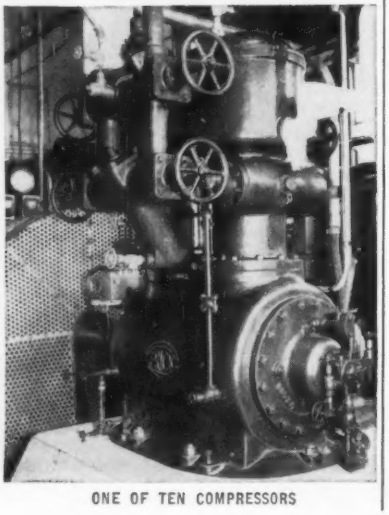
DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA., U. S. A.



EVAPORATIVE CONDENSERS SAVE WATER



ONE OF TEN COMPRESSORS


## *Trends & Forecasts*

### Look to Low-Calorie Business

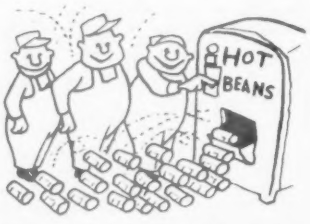
Dairymen are focussing their attention on low-fat milk products, where they see great growth potential. Diet-conscious Americans are reaching more often for skim milk, cottage cheese, and buttermilk, forcing the industry to adjust to a new sales picture. Foremost, for example, sells one-third more skim milk than in 1952.

Industry spokesmen predict dairymen will take advantage of this trend by offering new products, including low-fat substitutes for other items, new flavors of skim milk, and new variations of cottage cheese.

One newcomer to the market is a low-calorie rival of cream cheese. It's a potato chip dip made of cottage cheese—Golden State's Tast-E-Wip.

## Hors d'Oeuvres

▶ **Two food firms have been purchased by an oil and gas company. Certainly a safer investment than a hole in the ground.**




▶ **Why doesn't someone develop a jackpot food vending machine so that factory workers can enjoy exciting meals?**

▶ U of Cal researchers reveal that men like their fruits sweeter than women (do).

▶ **"Corn" magazine reports that there are as many rats as people in the U.S.A., That's what "Pravda" has been saying, too.**

▶ Some 47 million cups of coffee will be drunk at coffee breaks today by 27 million workers—only 7 million of whom will not be able to sleep.

▶ **Campbell is selling soups in 50-oz. cans to restaurants, some of which serve it at $1 a portion. Very nourishing food for restaurateurs.**

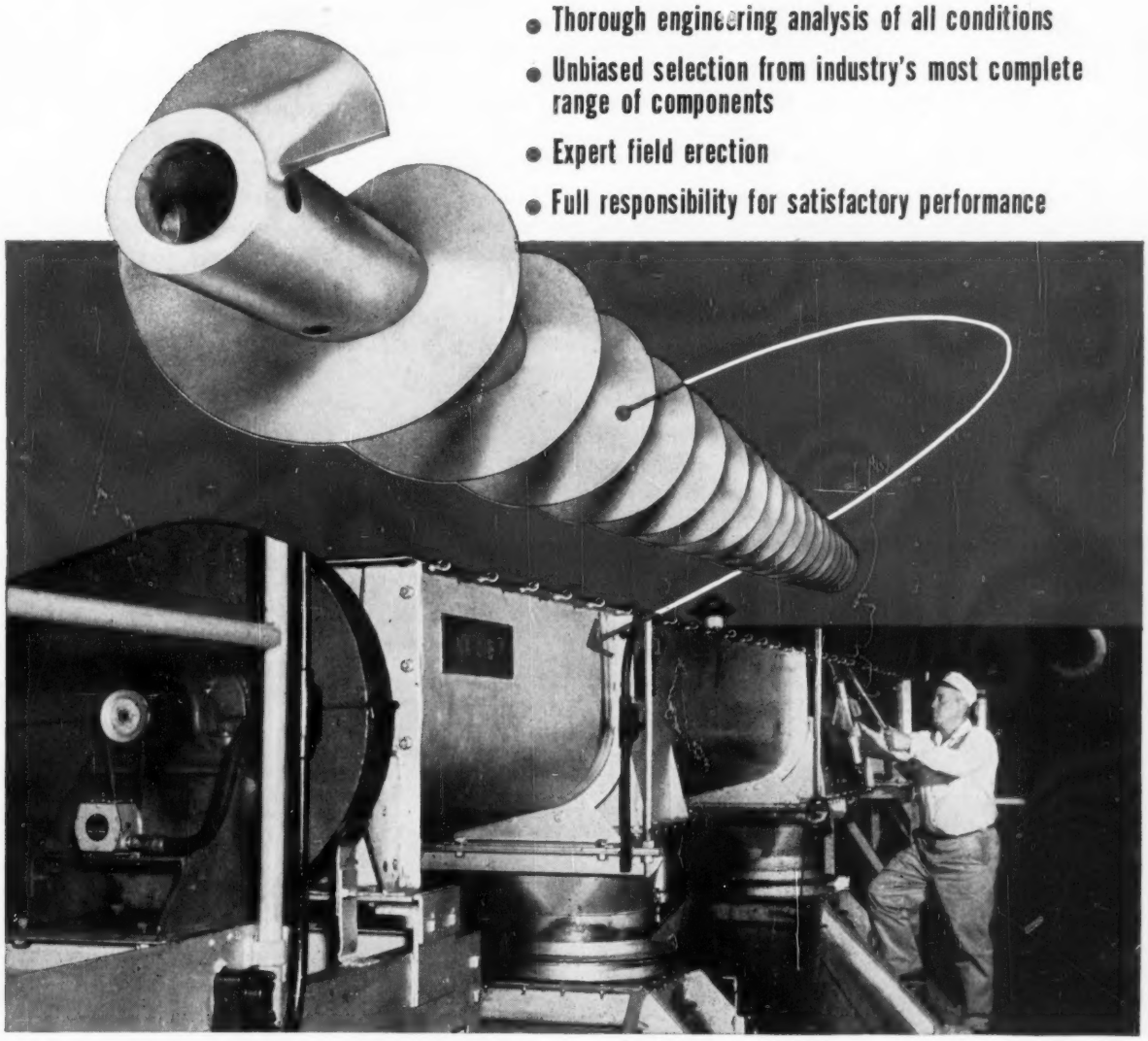
▶ Swiss vintners are moving wine from hillside cellars to bottling plants through a 3,900-ft. pipeline. Any leaks are sure to be quickly discovered.

▶ **Queen Nefertiti, of ancient Egypt, used perfume with wine as an ingredient. And that's how perfume became intoxicating.**

*Here's why a Link-Belt engineered screw conveyor installation means*

# a better-working system ...less work for you

- Thorough engineering analysis of all conditions
- Unbiased selection from industry's most complete range of components
- Expert field erection
- Full responsibility for satisfactory performance



FROM design of equipment to operation, you leave nothing to chance when you leave everything to Link-Belt's complete screw conveyor service. Whatever your needs, Link-Belt can engineer a system to meet them exactly . . . if desired, will handle entire erection and accept full responsibility for placing your system in operation.

Included in Link-Belt's full line of components are 17 basic screw designs, available in a variety of metals. Each offers Link-Belt's exclusive Quik-Link feature that permits fast, easy removal of any conveyor screw section or hanger without disturbing other components. An equally complete line of troughs, ball and babbitted bearing hangers, trough ends with ball bearing flange blocks and trough end seals, couplings, gates, spouts, and drives makes Link-Belt your convenient, one-source supplier for all your requirements. Ask your nearest Link-Belt office for Data Book 2289.

LINK-BELT

14,707

SCREW CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



For more data, circle this page number on card at back →

# PACKAGING FOR PROFITS
# MANAGEMENT'S DUAL CONSIDERATION

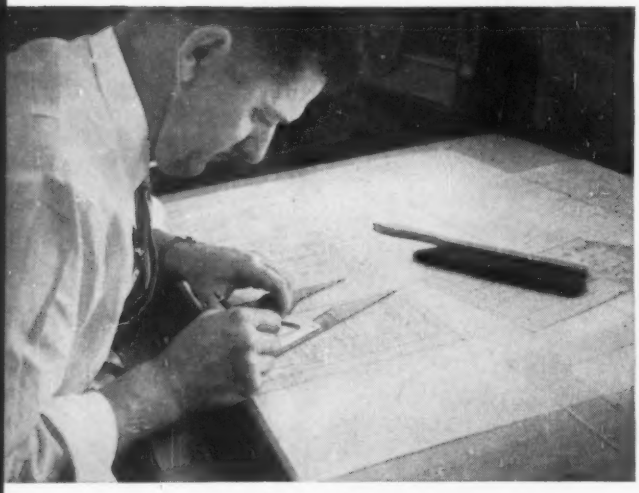
**Self-service selling plus steadily increasing costs**
**make the package decision a management responsibility**

Your two most important management considerations leading up to a packaging decision are sales . . . and costs. The question is: which package will do the most powerful selling job . . . and at the same time contribute favorably to profits? In many cases, the answer is the molded plastics package.

There is the obvious sales stimulant of sp rkling transparency that permits your product to sell itself. Or if you prefer, there are appealing colors to make your package more visually attractive at the point of sale. Molded plastic packages can be designed and manufactured to your specified shapes and sizes for distinctive styling and sales appeal.

The well-rounded merchandising experience of the plastics package molder can be valuable in fulfilling the sales requirements of your own package. But in addition, his careful analysis will include such important cost considerations as: the impact and strength requirements for positive protection in shipment and at point of sale . . . supplying you with a package of the proper weight to minimize shipping costs . . . fitting the package into your present loading procedures.

As the packaging decision becomes a management responsibility involving both sales and costs, there is no more experienced counsel to call upon than that offered by your plastics package molder.



A completely staffed design department at Wilpet can custom tailor molded plastics and packages for just about any product. Such important factors as shape, size, mechanical, chemical, and volume requirements are thoroughly examined before design begins.

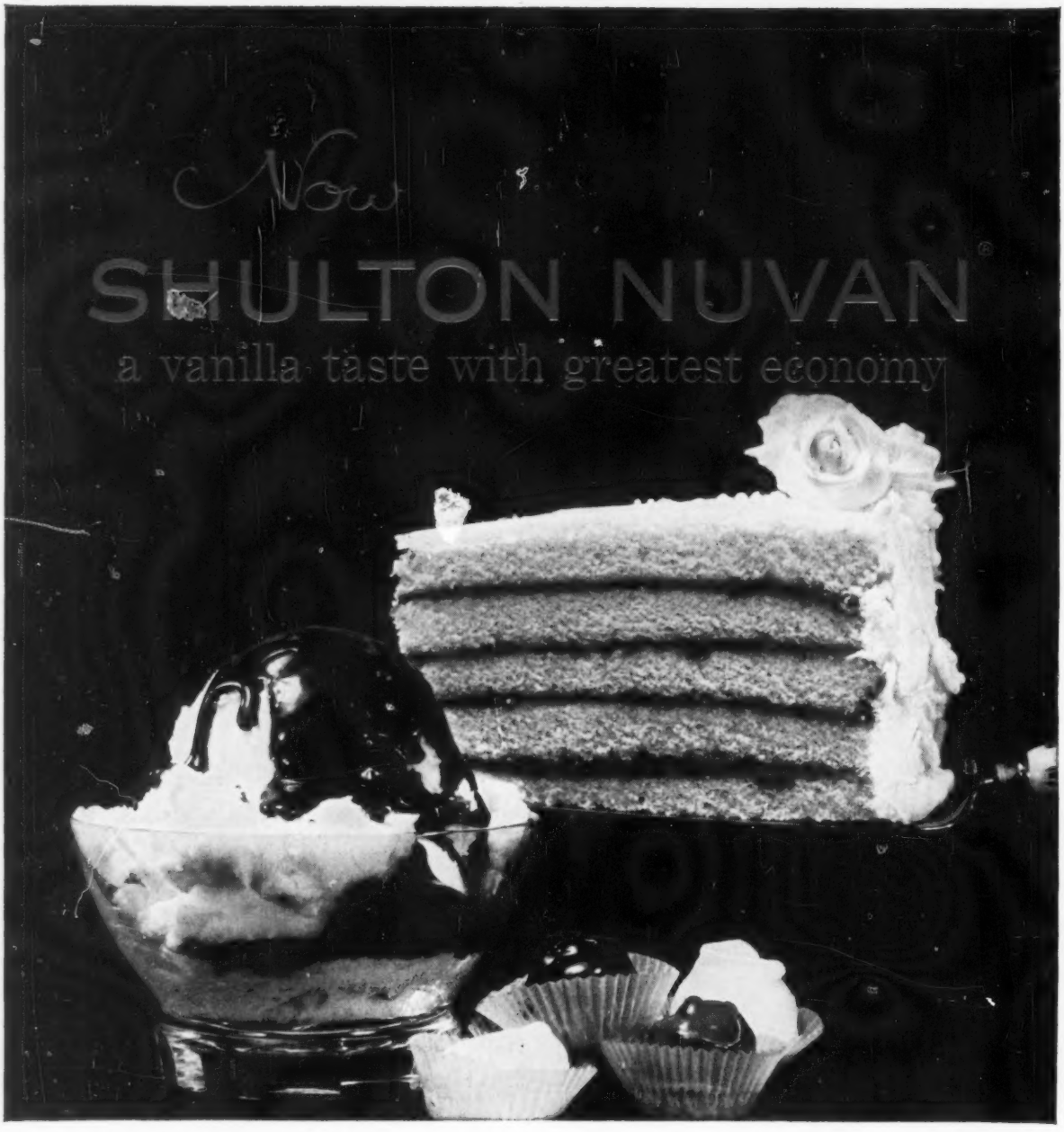
Wilpet's completely equipped tool shop can produce a master mold to tolerances as fine as + .003". Their production facilities include 20 injection molding machines with a combined output as high as 1,250,000 units daily!

*Monsanto supplies a large variety of Lustrex* styrene molding compounds to America's leading molders of plastics packaging*

Monsanto

*LUSTREX: REG. U.S. PAT. OFFICE

A unique package and serving dish combination is displayed with William L. Niclaus, President of Wilpet Tool & Manufacturing Company, Kearny, N. J. This goblette is one of the many creative packages produced by Wilpet.




**SHULTON NUVAN** creates a full range of vanilla effects . . . at a much lower cost than vanillin. Nuvan is a standardized mixture of Shulton Vanitrope® and Shulton Vanillin USP . . . offering up to four times the flavor strength of vanillin alone*

Both Shulton Vanitrope and Shulton Vanillin . . . blended in Nuvan under laboratory control . . . have been widely accepted—for **CHOCOLATE—BAKED GOODS—CANDY—EXTRACTS—ICE CREAM—PUDDINGS.**

Samples and technical bulletins available on request.

*Nuvan 17—*4 times the flavor strength of vanillin.* Nuvan 120—*2 times the flavor strength of vanillin.*

**SHULTON FINE CHEMICALS**

DIVISION OF

**SHULTON, INC., 630 FIFTH AVE., NEW YORK 20, N.Y., CIRCLE 5-6263**

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# DEVELOPMENTS TO WATCH



**Liquids are enclosed in microscopic capsules, one millionth inch** in diameter, by process developed at National Cash Register Co. Application to aromatic foods, such as coffee, is under study.

**A fluoroscope will spot-check fish sticks for bone particles,** tests indicate. Bureau of Commercial Fisheries is continuing work with fillets and blocks of fish, aiming at continuous inspection tool.

**Bitter principle in single-strength canned navel orange juice is obviated** by Noninginase, a new enzyme developed by Rohm & Haas.

**Aimed with a TV camera "eye", specially designed machine throws sugar** where wanted in new Australian bulk terminal—at 1,000 tons per hour. It will also handle grains and other dry bulk items.

**Nitrogen propellant likely will give food aerosols a boost this year.** So will the aluminum aerosol cans, now in commercial production.

**New low-pressure process makes polyethylene boilable and highly** crystalline. Plastic may be used to make juice "cans" and milk bottles and to coat papers.

**Machine-peeled by squeezing action, tiny shrimp are creating** a new industry in Northwest. Taken from mud at bottom of Pacific, shrimp run 80 to 120 per lb., against 10 to 30 for big Gulf prawns.

**Grocery store orders can be read photoelectrically, then converted** to audible signals that go by 'phone to central warehouse to be tape-recorded, decoded, and fed into data-handling units. IT&T invented system.

**Eviscerated turkeys are machine-stuffed by Swift, then packaged** and frozen. Sales prove housewives like ready-to-roast birds.

**Peach purees with fresh-fruit flavor are made by new essence-recovery concentrating** process. They can be used to flavor ice cream and beverages.

**Iso-ascorbic acid antioxidant can be added to pasteurized wine** at final bottling, Pfizer researchers believe. Then amount of bisulphite used in must and in storage casks could be less, for better finished wine quality.

**Lower cost of ascorbic acid has also revived interest in its addition** to flour as a replacement for sodium bromate as a dough conditioner.

**Advance in high-short processing of milk is achieved** in Switzerland. Raw milk is deaerated, heated to 300F. with live steam, and cooled under vacuum. Odors are removed, flavor and keeping quality improved.

**Spices in sealed envelope are held atop can** of Broadcast chili-with-beans by metal lid that slips over top rim of can and flips off easily.

SEE NEXT PAGE→

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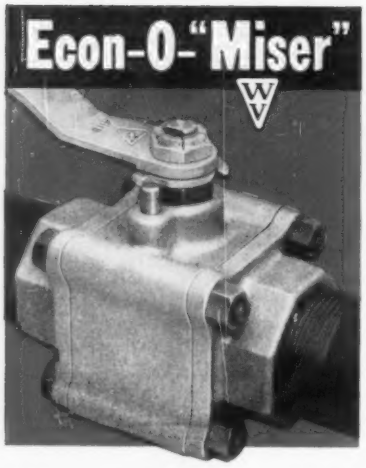



**Worcester's New Econ-O-"Miser" Ball Valve* is BOTH**

# VALVE and UNION

The costs of a union and installing it are eliminated. Add to this the longer operating life of the Econ-O-"Miser", the time and materials savings of *in-line maintenance*, and you get performance unmatched by *any* valve at *any* price.

The Econ-O-"Miser" is available in Bronze, Aluminum, Aluminum Bronze, Forged Carbon Steel, types 303 and 316 Stainless Steel. Seat and seal materials available: Teflon, Buna-N and Neoprene (others available on request.)

The many combinations of body and seat seal materials allow handling of exceptionally wide range of media.

**Other Outstanding Features**

- Compact for ease of installation
- Positive leakproof shut-off
- **In-line maintenance** permits quick, easy inexpensive repairs
- Two-way flow allows application of pressure or vacuum to either side of valve
- Quarter turn operation — readily adaptable to remote control
- Visual determination of OPEN — CLOSED positions — No manual check needed
- Round flow through the valve — minimum pressure loss and turbulence
- "Wiper-action" of resilient seat against ball eliminates abrasive wear due to foreign materials in media . . . assures leak-proof seal . . . long operating life

* Pat. Pending

*Write for full particulars*

**WORCESTER VALVE CO., Inc.**

18 Parker Street, Worcester, Mass.


## *Developments to Watch*

**Newest multi-pak foods:** (1) Wyman's sardines, four cans in cut-away cardboard sleeve. (2) Empire Food's jams and jellies, three flavors in wrap-around cardboard carrier with cut-outs to display products.

**Growing consumer interest in small cakes is revealed** by Pillsbury's market research. Four new loaf cakes market-tested by firm can be baked in most of 20 to 25 pan sizes commonly used by housewives.

**New high-capacity centrifuges seen at Chemical Show** separate solids from liquids under 150 psi. pressure, offering new process technique.

### Rays Kill Strawberry Mold

Knockout of strawberry botrytis mold by irradiation—without harming flavor or appearance of the fruit—is reported by E. C. Maxie, plant physiologist, U. of Calif., Davis.

Possibilities thus opened are of first importance: Seen saved are the 10 to 35% of mold-affected strawberries that now must be thrown out in eastern markets after shipment from California.

Further, the berries would keep several days longer after arrival.

### Antibiotic Keeps Fish Fresh

Aureomycin is now seen cheaply prolonging freshness of chilled fish as much as two weeks.

Given FDA approval of such fish preservation, this could enable shipment of West Coast fish to Midwestern markets.

Values of the antibiotic treatment are reported by the U. of Calif. Medical Center, San Francisco. Commercial-scale tests were made in cooperation with several San Francisco and Monterey fish firms.

While still aboard ship, whole fish were packed in ice containing 10 ppm. of Aureomycin. Then in the packing plants, fillets were dipped for a few minutes in a salt solution containing the antibiotic.

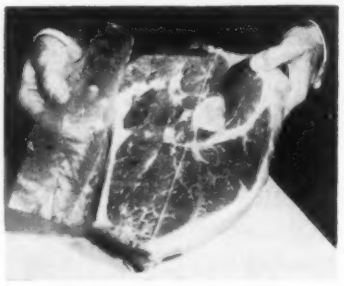
These fish stayed fresh as much as two weeks longer than the untreated fish in the control experiments.

### Bacon-Curing Agent OK'd

Use of sodium cyclamate as an artificial sweetening agent in curing bacon has now been cleared by USDA. Improved crisping qualities are cited.

Amount of agent added is not to exceed 0.15%, and bacon thus cured must be so labeled.

The treatment was originated by E. Kahn's Sons Co., Cincinnati, then further developed by DuPont, which plans to license use of its specific products under pending patents.



### Wrapped With a Dip

A quick cut and a peel, and meat dip-sealed in transparent plastic is ready for the pan. Protective coating provides all-around visibility of product. Wrigley supermarket chain has 6-months' exclusive use of method, developed by Seal Fresh Co., Detroit. Dow Chemical Co., supplier of some of ingredients for dip-mix, is working on similar process for other packers.

### Vintners Pipe Wine to Bottler

Direct piping of wine from the cellars of various affiliated vintners down to the bottling plant is reported by a wine organization on Lake Leman, Switzerland.

Employed is a 3,900-ft. polyethylene line rated capable of carrying a yearly vintage of more than 250,000 gal. Flow is by gravity through a total drop of some 100 ft.

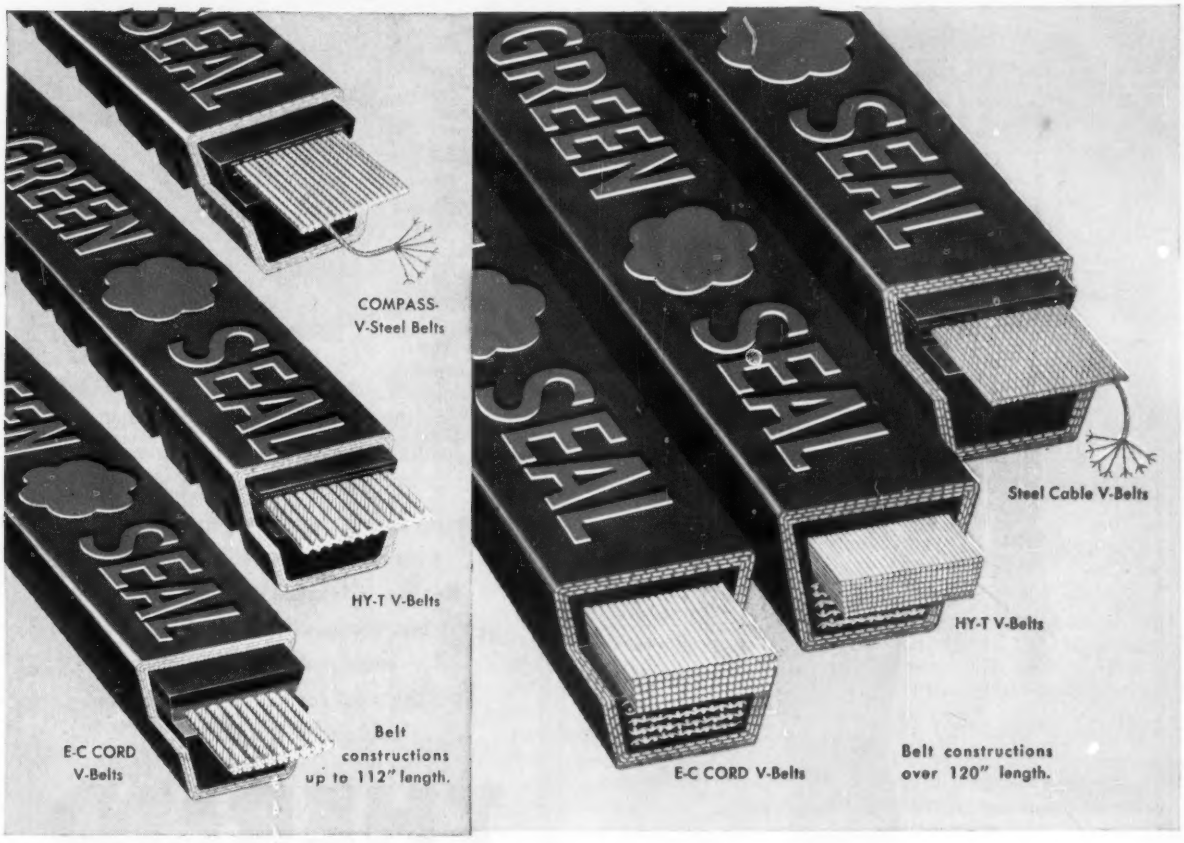
### Canning Co-Op Idea Grows

High interest is greeting the formation of California Canners & Growers, says the California Canning Peach Assn., which is sponsoring the new co-op.

Some 67% of its "1,360 growers accounting for 42% of the state's cling peach tonnage" have already approved acquisition of canning plant facilities. Negotiations are now

Do you know the inside story of

# V-Belts with the Green Seal?




Until recently dimensional stability was possible only in V-Belts with steel load-carriers as developed by Goodyear. But now you can have that stability in a complete line of belts – thanks to the development of Triple-Tempered (3-T) cord–synthetic cord tempered by Tension, Temperature and Time.

What's your pay-off from this dimensional stability?

When you're belting multiple drives, it's your one guarantee that every set of matched belts will *really* match. No matter how long you store them, they'll *stay* matched, too.

And once they're installed, you've got belts designed and built to work as a perfect team–without individual belts either "loafing" or overworking. In fact, you're protected from all the usual mismatching headaches that also include slipping, stretching, scorching.

In other words, you're belted for maximum trouble-free horsepower hours at minimum cost. There's no substitute for that kind of performance – or for the V-Belts with the Green Seal that give it to you – every time.

So see your dealer about the V-Belts with true dimensional stability–the V-Belts with the Green Seal. Or write Goodyear, Industrial Products Division, Lincoln 2, Nebraska, or Akron 16, Ohio.

DIMENSIONALLY STABLE V-BELTS
with the GREEN SEAL by

**GOODYEAR**

**THE GREATEST NAME IN RUBBER**

Compass, E-C Cord, Hy-T, Green Seal–T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Watch "Goodyear Theater" on TV – every other Monday 9:30 P.M., E.S.T.



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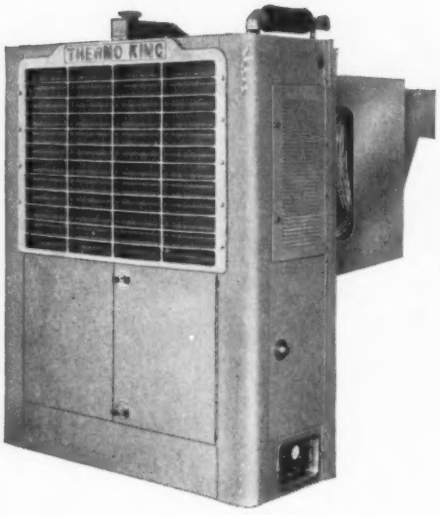
# not an extra pound to spoil the picture




We mean your *profit picture*. When you are hauling payload, every pound counts.

Lightweight Thermo King hasn't an extra pound anywhere—some models weigh as little as 445 pounds.

Because it is made of tough, lightweight aluminum, because it is a single self-contained package, and because it is the most compactly engineered unit on the market . . .

# THERMO KING

**TRUCK REFRIGERATION**

*Weighs Less*

NATIONWIDE SERVICE: Thermo King service stations on all important truck routes in United States, Canada and Mexico

THERMO KING CORP., 44 S. 12th ST., MINNEAPOLIS 3, MINN.



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in progress for two plants, each having good acceptance of its products and brands.

Further backing the plan are grower associations concerned with Freestone peaches, pears, tomatoes, and asparagus.

### Fat in Diet Normal—And Vital

"In general, evidence at this time doesn't justify any radical change in the kind and amount of fat in the diet in preventing heart disease."

So states Dr. Ruth Leverton, of USDA's Human Nutrition Research Div.

She emphasizes that fat is a normal food used by the body in a normal fat-for-fuel process. It carries vitamins A and D, also supplies fatty acids essential to growth and health. One of latter is vital linoleic acid, which must be derived from the food we eat.

Dr. Leverton explains that a food's cholesterol content doesn't necessarily determine the amount in the blood. Further, sufficient evidence is lacking that lowering blood cholesterol reduces atheroschlerosis.

### Schedule of Events

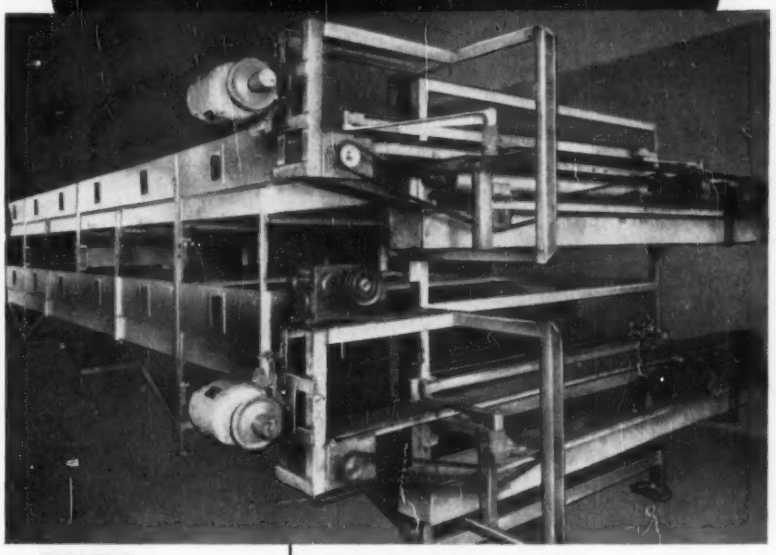
**January '58**

19-21—National Preservers Assn., annual convention; Ambassador Hotel, Atlantic City.
19-22—Canning Machinery & Supplies Assn., annual exhibition; Convention Hall, Atlantic City.
19-22—U. S. Brewers Foundation, annual meeting; American Hotel, Bal Harbour, Fla.
20-23—National Canners Assn., annual meeting; Traymore Hotel, Atlantic City.
22-26—National Potato Chip Institute, annual meeting; Hollywood Beach Hotel, Hollywood, Fla.
27-29—National Dairy Council, annual winter conference; Dayton-Biltmore Hotel, Dayton, Ohio.
27-30—Plant Maintenance & Engineering Show; International Amphitheatre, Chicago.

**February**

3-8—Short Course on Food-Plant Sanitation; U. of Illinois, Urbana.
13—Dairy Products Improvement Institute, annual meeting; Hotel Statler, New York City.
14-16—Institute of American Poultry Industries, fact-finding conference; Municipal Auditorium, Kansas City, Mo.
16-28—American Institute of Baking, production management seminar; 400 E. Ontario St., Chicago.
24—National Food Conference, sponsored by nation's major food groups; Hotel Statler, Wash., D. C.


# CUSTOM BUILT
## Food Processing Equipment



Pictured above is an SMP double-deck pasteurizer-cooler designed and built for one of America's foremost food processors. This *custom-built* unit assures accurate, constant temperature control for perfect, uniform pasteurizing and/or cooling. Assures maximum production in limited floor space. Separate controls permit dual or single unit operation. Flexible heat control assures correct steam requirement for any container load from one to 500 units. Readily economically expandable in widths from 3' to 8' and in any length needed to meet production and processing requirements.

## Costs You No More to Buy
## Costs You Less to Operate

Every SMP pasteurizer, cooler, conveyor or related unit is designed and built to your particular need. In combination these machines form SMP food processing lines *custom-built* to your operation's specific requirements.

For more than 15 years, Standard Metals Products has proved by performance in the plants of America's foremost food processors that *custom-built* processing equipment can *cost no more to install . . . cost less to operate.*

All SMP asks—*without obligation whatever on your part*—is an opportunity to demonstrate what we can do for you.

**STANDARD METAL PRODUCTS**

STANDARD METAL PRODUCTS CO., 123 N. RACINE AVENUE, CHICAGO 7, ILLINOIS
GENTLEMEN: We are interested in your recommendations in regard to the food processing equipment checked, or described in letter attached:
☐ coolers ☐ exhausters ☐ pasteurizers ☐ accumulating tables
☐ can washers ☐ case-sealers. No obligation incurred.

Company_____
By_____ Title_____
Address_____
City_____ Zone_____ State_____

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## How to reach more customers

Gives <u>your</u> fruit juice blends extra sales appeal

# VITAMIN C FORTIFICATION

**Extra sales appeal comes naturally when the words *Vitamin C Fortified* appear on your label. More and more smart shoppers look for and buy the brand with the added vitamins. Why not give *your* juice blends and fruit drinks this big competitive advantage? And the cost? Just a *fraction of a cent* per unit!**

**Pfizer, a leading producer of vitamins for 20 years, offers you Vitamin C (ascorbic acid) in the most convenient, easy-to-handle forms. In addition to vitamin fortification, Pfizer Ascorbic Acid can also provide an important safeguard for your beverages against color and flavor fading that result from oxidation during shelf life.**
**For full details about Pfizer Vitamin C write to:**

PIONEER AND LEADING
MANUFACTURER OF VITAMINS

Pfizer

**CHAS. PFIZER & CO., INC.**
**Chemical Sales Division**
630 Flushing Ave., Brooklyn 6, N. Y.
Branch Offices:
Chicago, Ill.; San Francisco, Calif.;
Vernon, Calif.; Atlanta, Ga.; Dallas, Tex.




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## See Strides in Labor-Law Draft

There are, true enough, signs of "election year reins" in the Administration's proposals for labor legislation, recently briefed by Secretary Mitchell.

As a result, complete satisfaction with the '58 approach isn't being voiced by partisans of either persuasion.

**Even so, the program has excellent points.** It lines up a number of T-H law amendments, mostly dealing with matters of union responsibility. Further, it calls for legal guarantees of individual worker's rights, also specifies assured protection of union funds.

Fearing "excessive government supervision" of their internal union activities, unions will argue with certain of the measures. Similarly, they'll oppose moves to give the states additional powers in labor matters.

Many employers, on the other hand, are displeased at failure of a "right to work" measure to get in under the wire. And they don't like inclusion of employer-operated welfare plans for "public listing."

All told, however, the program, if passed, would represent definite progress—for both labor and management—hence the hopes it doesn't abort in strung-out debate.

## FDA Balks Budget Cuts

FDA officials are worried—but not dismayed—by White House budgetary-axe pronouncements.

They figure Congress will come through with at least as large a budget for the Agency's expanding programs for fiscal '59 as it did for the current period. And it will balk any efforts to trim back its present programs.

Main problem, as FDA sees it, is getting enough money for continuous growth in line with the planned expansion of FDA within the coming 10 yr.

Budget increases the past two years have brought the Agency back to its pre-Eisenhower strength. However, holding spending to present levels would mean deferring new projects.

## '58 Sugar Quota: 8.8

Initial sugar quota for '58 has been set at 8.8 million tons—the same as the starting figure for '57.

Candy makers, bakers, and other big users, had hoped for larger supplies, as a factor to 'brake back' prices. Growers and refiners had called for less, favoring the price-rise picture.

The quota usually is varied through the year. It rose to 9.3 later in '57, then dropped back again to 8.9.

## Farm Picture at 'Standstill'

Nobody likes today's farm policies—but nobody in Washington expects a big change, either.

Administration and Congress are at dead-center when it comes to revising basic legislation.

This leaves the farm picture for '58 about where it was last year. Farm prices won't swing widely either way.

Agriculture Secretary Benson will ask authority to lower price supports, a policy he's pursued since taking office in '53. Congress will probably say "No."

Benson will also ask for changes in the Soil Bank Law, and will press a policy of paying farmers to retire whole farms. Congress likely won't fight this.

But this is mere tinkering and doesn't add up to an effort to start all over again with new legislation. It won't make any of the parties happier.

## FDA Revives Info Service

Processors now can keep posted on the latest informal interpretations of rules made by FDA staffers.

For, the agency is launching a new Information Service—similar to the former "T.C." series (Trade Correspondence) used until 1946 to help bring a uniform understanding of the amended Food & Drug Act.

Culled from responses by staffers to company inquiries, the informal statements will be distributed to firms and individuals on FDA's mailing list.

If you already receive *Federal Register* statements, you're automatically on the list for the new service. Otherwise, write FDA for inclusion.

## BRIEFS

**No majority, no picketing!** This is the substance of a new NLRB ruling prohibiting unions that lack major representation of employees from picketing practices aiming to force representation on workers who don't want it. Such activity, said the Board, amounts to coercion in violation of the T-H Act.

**Farm quotas on poultry** is the aim of proposed legislation, idea being to make curbs effective whenever two-thirds of the growers call for them. But little chance is seen for such a bill, for Washington views production controls on poultry as impractical.

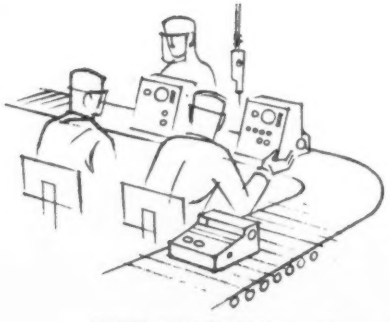
**Extension of Trade Agreements Act** is sought by Administration. This would authorize a 5-yr. continuance (after June 30) of President's power to enter trade pacts. Further specified would be percentage reductions in tariff rates.

**Dairy-product support has been slashed** by Secretary Benson—with rate due to drop to legal minimum of 75% starting Apr. 1. Current support for manufacturing milk has been 83% ($3.25 cwt.) and for butterfat 80% (58.6c. a lb.). Downward adjustment is stated to represent average equivalent of 2½c. a lb. for butter and cheese and ½c. a qt. for milk.

**"Please, no freeze on findings on frozens!**—is cry of frozen-food advisory committee members. They complain that important new Government research data—on quality factors of frozen foods and temperatures and length of time they're stored—aren't being disseminated quickly or widely enough to do the most good.

*No. 5 of a series*

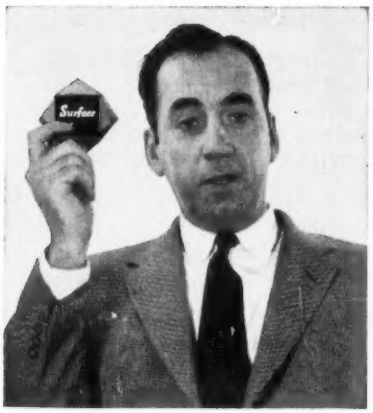
# "I got rid of that cold sweat





← For more data, circle this page number on card at back

# Kathabar systems control all air dimensions... temperature, humidity and purity"




You will earn maximum profits from an investment in comfort air conditioning if you specify a Kathabar "full-dimensional" system.

All over the country, Kathabar systems have improved labor productivity in hot and soggy weather, reduced absenteeism, and brightened employee morale.

These profits alone have justified the Kathabar equipment, but there are additional benefits which distinguish Kathabar air conditioning from conventional systems:

**extra returns**

The Kathabar system automatically conditions *all three* vital dimensions of air—temperature, humidity, and purity. Its control of humidity is a feature favored by users, because it eliminates the shock you feel when you enter or leave spaces conditioned by conventional refrigeration.

The system will either dehumidify or humidify.

**specify bacteria count**

Air purity is important for both comfort and health, and a Kathabar system contributes to each. Its chemical wash removes odors and dirt from the air. Even better, it kills over 97% of airborne micro-organisms. This drastically reduces the exposure of people and products to mischievous bacteria and molds.

With a Kathabar system, you can actually specify the maximum bacteria count you will tolerate in your space!

Dehumidification for comfort in a Kathabar system is usually accomplished with cooling tower or city water. Where refrigeration is included, the Kathabar system gives you top cooling efficiency with surprising savings in tonnage and horsepower. This is because the system handles latent loads with chemical absorption using lower cost water, and frees refrigeration to handle only the sensible loads.

Since dehumidification is direct (by a chemical absorbent) in a Kathabar system, you avoid the costs of overcooling and re-heating.

**no carry-over**

The absorbent will not vaporize or carry over into the air stream. With routine checking, it will maintain its effectiveness for years without replacement. The germicidal and bactericidal results are not affected by absorbent age or condition, or whether the system is humidifying or dehumidifying.

Be sure to check the Kathabar system if you want the greatest returns on your air conditioning investment.

**who uses Kathabar systems**

Kathabar systems make profits out of air for these industries:

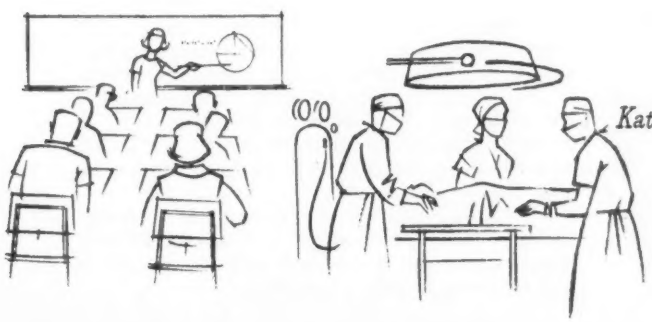
| | |
|---|---|
| Atomic Energy | Machining |
| Breweries | Matches |
| Cake Mix | Marine |
| Candy | Meat |
| Cellophane | Offices |
| Cellulose | Ordnance |
| Cereals | Paper |
| Chemicals | Pharmaceuticals |
| Coffee | Plastics |
| Comfort | Printing |
| Compressors | Rockets |
| Cookies | Rubber |
| Electronics | Shellac |
| Explosives | Sugar |
| Film | Sanitaryware |
| Foundries | Testing |
| Gelatin | Textiles |
| Glass | Transformers |
| Glue | Transistors |
| Gum | Vacuum Tubes |
| Hospitals | Varnish |
| Hotels | Waterworks |
| Lacquer | Wire |
| Lenses | Yeast |

**how they use Kathabar systems**

Many of these industries use Kathabar systems for comfort. Others use them to (1) maintain spaces at 80 F and 55% RH or lower; (2) obtain continuous air at sub-freezing dry bulbs and dew points; (3) eliminate condensation; (4) improve drying processes; (5) deliver continuous pure air.

**send description of your problem**

AIR CONDITIONING & DRYING DIVISION
SURFACE COMBUSTION CORPORATION
2382 Dorr Street Toledo 1, Ohio



*Kathabar systems by* Surface®



For more data, circle this page number on card at back →

# NEW PACKAGES & PRODUCTS

## Flip Lid Holds Spice Packet

The housewife can flavor her chili to the family taste with a new package used by Illinois Meat Co. for its Broadcast chili with beans. The package consists of a conventional can with a polyethylene and cellophane packet containing spice, clamped to the can with a second metal lid.

The can is reported to solve the problem of spicing preferences which differ in various regions of the United States. Packing the spice separately allows the consumer to prepare hot, medium or mild chili.

Costs of package are about 8% higher than conventional methods. Package is supplied by Continental Can Company.

The flip lid is patterned so that it fits securely into the recessed bottom of another can. This allows more secure stacking. The spice pouch is made of pliofilm.

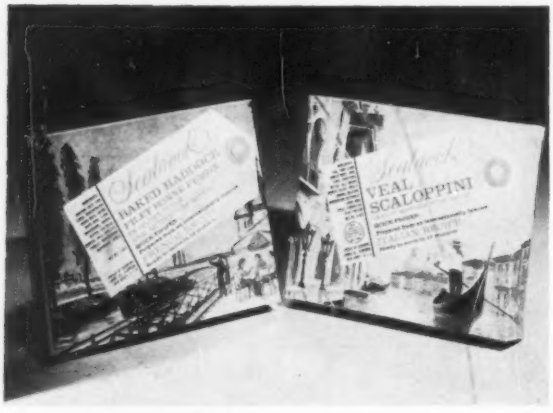
The "second" lid is easily opened with a spoon handle or the blunt end of a can opener.

Circle 26A on Reader Service Card

## "Flip-Top" Box For Tea Bags

Martin L. Hall Company has adapted the popular cigarette "flip-top" box for its Victor Tea line. Gaining rapidly in popularity, the box is reported as the first of its kind to be used in tea packaging.

Sturdy and appealing, the box is easy to store and provides a good quality-protecting closure. The carton now in use holds 16 tea bags.




## "Continental-Flavor" for Frozens

Colorful French and Italian scenes add a Continental atmosphere to the packages used for the new Seabrook Gourmet Frozen Foods. Lithographed in five colors the printing process utilizes an ultra-fine line screen and fine color tones.

The products, prepared from noted European recipes include baked haddock, filet bonne femme in white wine and mushroom sauce, beef in red wine sauce, veal scalloppini in Marcelle wine sauce, and chicken cacciatore.

The frozen products are cooked in a Miracle Pack placed unopened in boiling water for 12 minutes. Cartons are reverse end tuck treated with a high gloss wax finish.

## Revamps Cereal Package, Label

A brighter label plus a convenient perforated easy-open top marks the new look in Post cereal packages. A printed carton has replaced the wax overwrap and the trademark and product names are more prominently displayed.

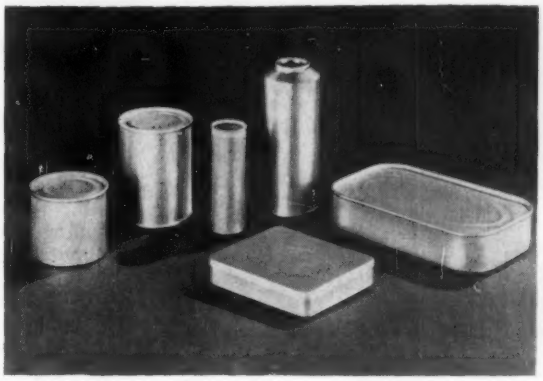
Brand product name has been moved down the front panel for easier identification when the packages are stacked flat. Shown are the old package left contracted with new design right.

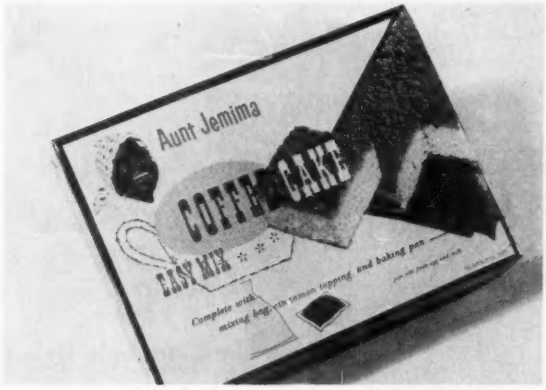
## Supplier's New Aluminum Line

Continental Can Co. has for years been producing a wide variety of aluminum can styles. Shown in photo at right are: Round-style two-piece drawn can, a three-piece open-top cemented side seam can, an extruded can taking either a cup-and-valve or be made to accommodate a slip cover, larger size extruded aerosol can.

First of the two flat cans from left to right is a drawn oblong hinged cover box. The second is a drawn two-piece rectangular can.

Circle 27A on Reader Service Card






## "Instant" Coffee Cake Product

Newest product of Quaker Oats Co. is Aunt Jemima coffee cake easy mix, to be introduced nationally this month.

A mixing bag and baking pan, along with a cinnamon topping, are enclosed in a foil covered carton. An egg and one-third cup of milk are added to the mix in the bag and the bag squeezed to blend the contents.

Convenience to the consumer lies in the fact that there are no bowls or pans to wash, and no cleaning up is necessary.

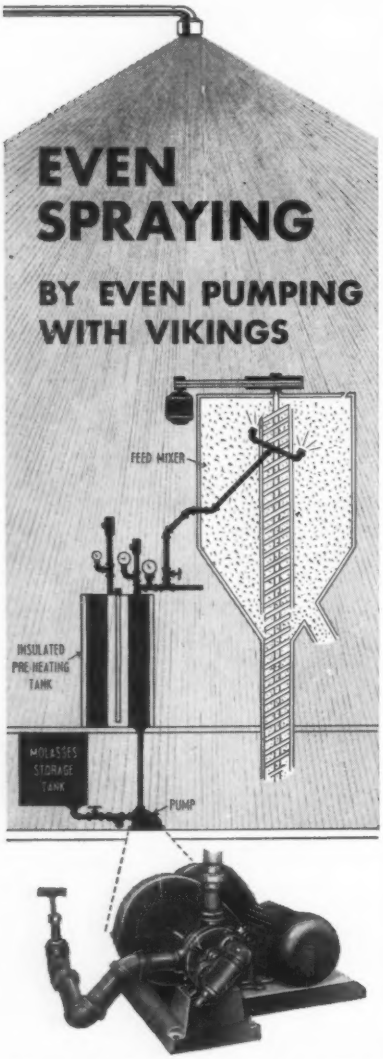
## "Drip or Pour" Bottle Fitment

Reported as the first major packaging change made by Lea & Perrins, Inc., in 125 years is its new Worcestershire sauce bottle. The new package has a drip or pour plastic fitment and a screw closure. The new dispenser and cap replaces the glass stopper and inner cork seal.

The product can be dispensed in drops or poured in a stream, simply by changing the angle of elevation of the bottle.

Designed by a Brooklyn, N. Y. dentist—Dr. Samuel Kirschenbaum—the new package feature is patented. Bottle fitments and closures are supplied by Owens-Illinois Glass Co.

Circle 27B on Reader Service Card




Even spraying is a basic, necessary feature of the "Spray-Mo-Las" stock feed sprayers produced by Bob F. Riegel of Riegel & Son Elevator, Woodington, R. R. 4, Greenville, Ohio. The unit illustrated sprays molasses on dry ground feed. Riegel also makes a "Spray-Mo-Fat" unit for spraying animal fat on feed. Both units are equipped with Viking Pumps because Vikings deliver a smooth, even flow of molasses or fats to the spray jets, when feed is mixed.

Because of positive delivery by Viking Pumps, uniform quality of feed can be maintained, so Riegel spraying equipment has found a ready market among feed dealers.

Smooth, even pumping is a built-in quality of every Viking. If you have a pumping problem requiring constant flow, Viking can be your answer. In fact, if you have any pumping problem, see your nearby Viking distributor, or write for bulletin 58se.

*VIKING — the leader, not a follower, in Rotary Pumps*

**VIKING Pump Company**
Cedar Falls, Iowa
In Canada, it's "ROTO-KING" pumps

See Our Catalog in Sweet's Plant Engineers File


## *Packages & Products*

### Bottle in a Bag

Printed cellophane bag adds holiday appeal to bottles of wine processed by Bardenheiser's Wine Cellars, St. Louis. A snowflake design of black and gold appears on the top and bottom of the bag, while an unprinted panel gives label full visibility so the consumer may easily select the type of wine desired.

Processor has found the use of the bag, supplied by the Dobeckmun Co., Cleveland, an inexpensive means of attracting attention. The bags do not date themselves to any given holiday or season.

Circle 28A on Reader-Service Card

### Revamp Product, Package

A new instant non-fat dry milk in a bright new package is being introduced by the Pet Milk Co.

The "flavor saver" package was designed and research-tested for greater shelf appeal and comes in two sizes: 4 qt. and 12 qt. The 4-qt. package replaces the glass jar used by the company since it introduced instant non-fat dry milk nationally in 1954.

The improved product is the result of the intensive work in Pet Milk Research Laboratories where an exclusive instantizing process was developed in which the milk crystals are puffed, dissolving the instant they touch water.

Four-quart package is constructed with a laminated foil and cellophane over-wrap. Twelve-quart size employs a special laminated foil and polyethylene over-wrap. Both packages feature a metal pouring spout for greater consumer convenience.

### Market Tuna-Furters

Made entirely of choice tuna filles, and duplicating the frankfurter in size and shape are Tunies, a new seafood product of Tunies, Inc. Now on sale in the southwest, the product will soon be available nationally.

The result of four years of research and experimentation, Tunies are reported to be free of fish taste and odor.

Packaging is similar to that of frankfurters.

Miniatures, to be called "Martunies," and a bologna called Sealami will soon be offered.

### Miniature Caramels Debut

Marsettes, chocolate-covered caramel pieces packaged in roll form, are now marketed by Mars, Inc.

Processor began distribution of the new bite-size product in October and expected nation-wide coverage by the first of the year.

Introduction of the new product was influenced by several factors. J. R. Fleming, vice-president and assistant manager of the Chicago Candy Company listed the reasons:

"First the American Market today is more prosperous than ever before. Second, people want and will pay for good new products. Third, the American people are diet and caloric conscious."

# JACK FROST has a reason...

Jack Frost has a new sales booster... a Riegel over-waxed laminated glassine liner that *keeps* brown sugar soft and fluffy. Made extra strong and flexible, the liner unfolds neatly and is a cinch to refold *tightly*. Also used for Jack Frost Verifine sugar... both packaged at high speed on Pneumatic Scale Double Package Maker. The name Riegel stands for product protection always... plus

...flexible packaging materials that are tailored to run at high speeds on automatic machines

...made to your own specifications, printed, waxed, coated and laminated combinations of all types

...packaging materials that are made right, run right, and priced right.

You too may boost sales potential with a special Riegel protective material. For modern packaging that helps bring customers back again and again, write Riegel Paper Corporation, 260 Madison Ave., New York 16, N.Y.

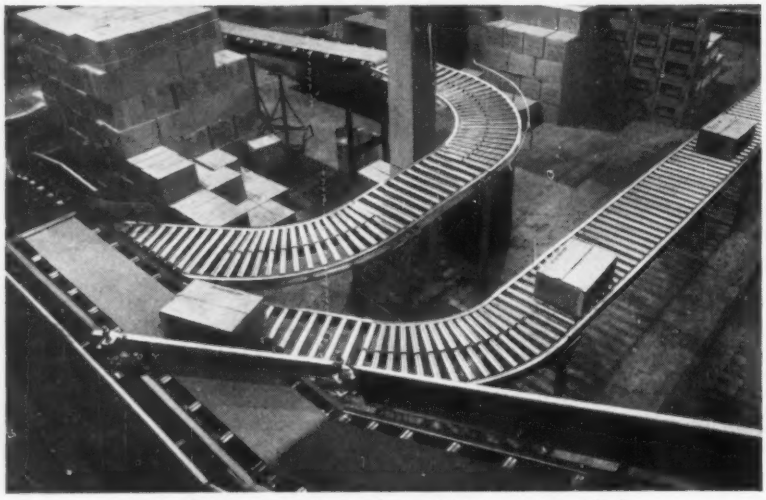
**Riegel**

PROTECTIVE PACKAGING MATERIALS

TO OPEN PRESS HERE
NEW!
JACK FROST Package brings you the softest, freshest BROWN SUGAR ever!
Jack Frost new super-soft brown sugar is wonderfully soft, fluffy and fresh because it is packed in a special new glassine liner.
mason jar and cover tightly. It should not cake or
Harden.
NOTE. To recondition any brown sugar that has been handled carelessly, empty into mason jar. Line cover with wet blotting paper and allow to stand until sugar absorbs necessary moisture. Empty and mix thoroughly – use at once.
JACK FROST SUGARS Manufactured by THE NATIONAL SUGAR REFINING CO. NEW YORK, N. Y.

P.S.: IMPORTANT PACKAGING NEWS!
Riegel's new Indiana Plant is specializing in the production of PRINTED POLYETHYLENE FILM and Polyethylene extrusions on cellophane and Mylar®.
Your inquiries are invited.

# Ask Standard how to cut costs with conveyors



Order picking is expedited and simplified by this Standard system of roller and belt conveyors in large warehouse.

## Roller and belt conveyors ease warehouse traffic jams

FAST flow of goods and simplified labor add up to more profitable warehouse operations.

Standard offers a wide variety of gravity and powered, permanent and portable conveyors — that can help you establish smooth, more profitable warehousing.

Spend a few moments with a Standard engineer. He'll show you how inexpensive Standard conveyors give you maximum flexibility at minimum cost. He'll show you, too, how Standard conveyors provide the many advantages of a custom-designed system at low cost. For the name of your nearby Standard engineer write STANDARD CONVEYOR COMPANY, General Offices: North St. Paul 9, Minn. Sales and Service in Principal Cities.

(LEFT) Belt-booster in a gravity roller conveyor "order picking" line. (RIGHT) Lift or lower floor-to-floor with an INCLINEBELT. Available in a wide range of heights and belt widths.

Write for Bulletin 309. Address Dept. D-1, or contact the Standard engineer listed in your classified phone book.

Standard 50 years of conveyor experience
GRAVITY & POWER CONVEYORS


## Packages & Products

### New Cheese Spread

Tast-E-Wip, a creamy smooth cheese with a tangy taste and wide variety of uses, has been introduced to California housewives.

Developed by the Golden State Co., the product contains only one-quarter the number of calories that cream cheese does.

Because of its soft, even texture, Tast-E-Wip is reported easy to work with, offers wives a simple solution to preparing new and unusual meals.

The new cheese is ideal for dips, hors d'oeuvres, molded salads, cake fillings, frostings, and casseroles.

### Add Aroma to "Instant"

Instant coffee marketed by Chase & Sanborn now boasts a "natural coffee aroma". An intensive national advertising and merchandising campaign will backstop introduction of the new feature.

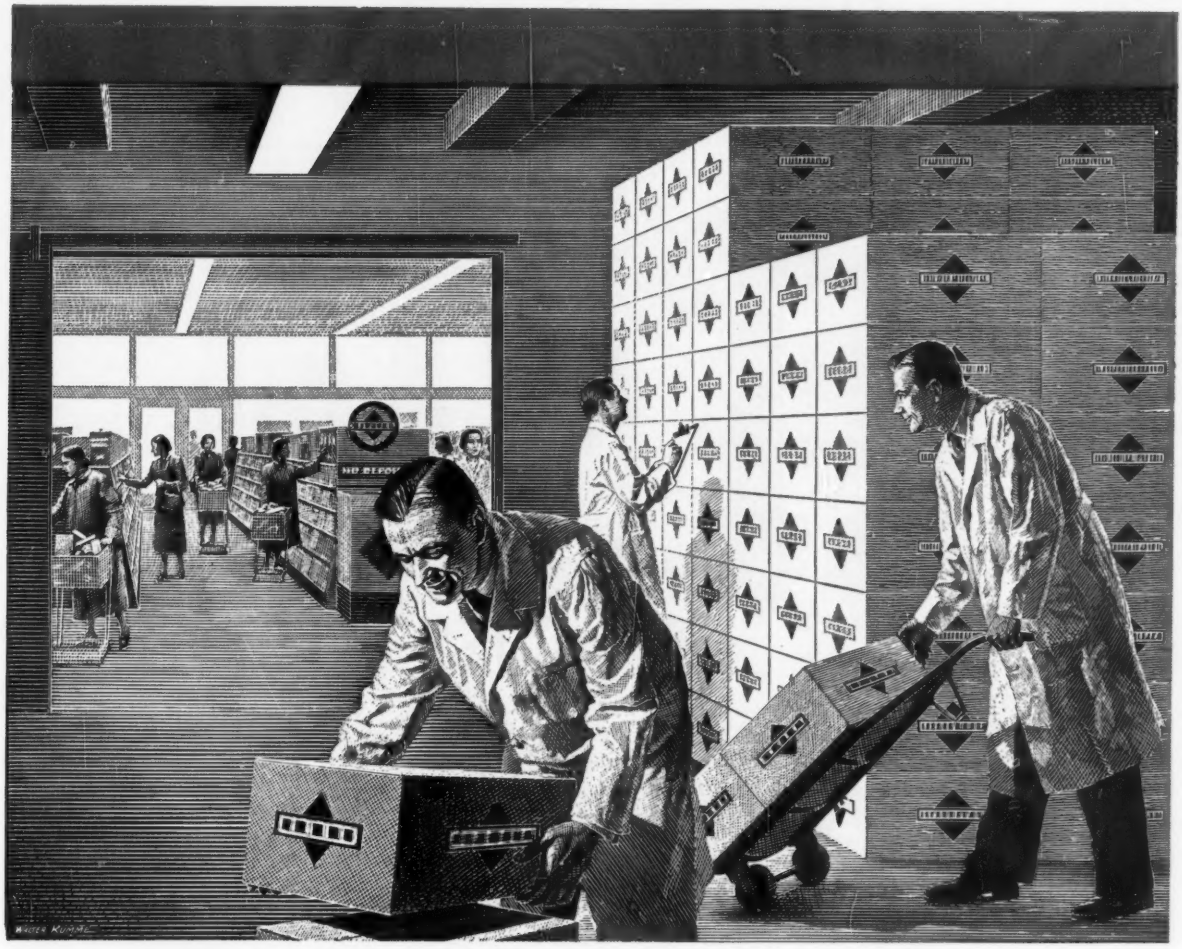
The result of years of laboratory experimentation, the feature will be noted prominently on all labels in both six- and two-ounce jar sizes.

### New Product Shorts

**Frozen peas** in a 16-oz. package are a new product of North Pacific Canners and Packers, Inc. Brand name is Flav-R-Pac.

**Concentrated Orange Juice** in 6- and 12-oz. cans has been added to the frozen food line of Seabrook Farms Co.

**Hydrolyzed Vegetable Protein** called Triple-H seasoning is now marketed by Hercules Powder Co. The protein is designed as an ingredient for seasoned hamburger patties, meat balls, ham, bacon, sausage and beef tongue. It contains more mfg than the regular line.



# WIN IN THE BATTLE OF BRANDS

*There are more than 150,000 brand names registered in the United States—competing for the customer's attention.*

*In this "battle of brands" brightly printed Gaylord Boxes are a vital link in the chain of visual impressions that pays off in sales.*

*This is true because Gaylord excels in printing. Gaylord has the specialized experience and equipment to make quality boxes do their selling best—with your brand name accurately expressed in eye-catching colors.*

*Put Gaylord Boxes on your selling team. Call your nearby Gaylord office.*

Gaylord Boxes

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

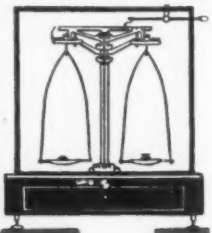
GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

DIVISION OF CROWN ZELLERBACH CORPORATION



For more data, circle this page number on card at back →

# A LITTLE



# ALGIN

# DOES A LOT!

This unique water soluble colloid solves all these and other problems:

| | | |
|---|---|---|
| **THICKENING** | .20% | Will thicken and give good body properties to syrups, fillings, meringues. |
| **SUSPENDING** | .20% | Will suspend particles such as cocoa and citrus pulp. |
| **STABILIZATION** | .20%<br>.15%<br>.005% | Will retard or prevent water migration and ice crystal formation in frozen foods.<br>Will stabilize cake icings, preventing excessive absorption or cracking and shaling.<br>Will stabilize the foam formation on beer. |
| **EMULSIFYING** | .35% | Will produce stable oil in water emulsions even at very low pH. Is most useful in French Dressings. |
| **GEL-PRODUCING** | .80% | Will form tender and tasty gels for food uses, such as desserts, fillings, bakery gels. |
| **FILM-FORMING** | .15% | Will produce an oil resistant film on paper while 1% solutions will form films suitable for coating food products. |

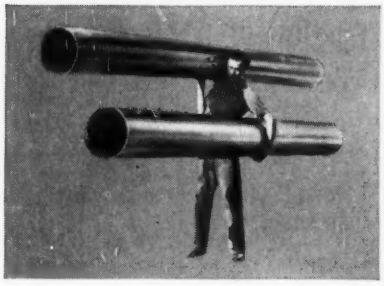
**YOURS ON REQUEST:** Technical data covering properties and applications of algin products. Simply note application of interest so that we can advise which type of algin product is most suitable for your requirements.

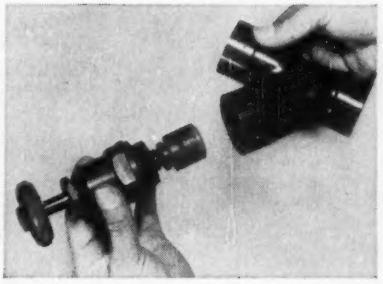
## KELCO COMPANY

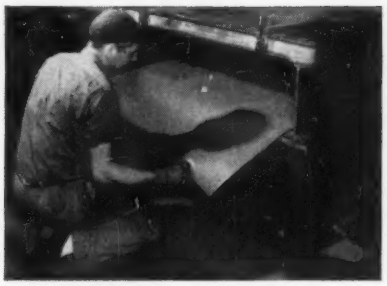
120 Broadway, New York 5, N. Y. • 20 N. Wacker Drive, Chicago 6, Ill. • 530 West Sixth St., Los Angeles 14, Calif.
Cable Address: Kelcoalgin—New York

# PVC stops corrosion

(POLYVINYL CHLORIDE)

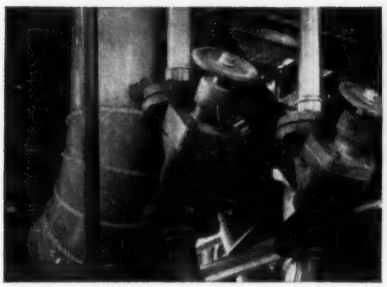


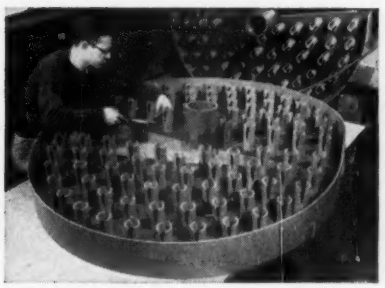


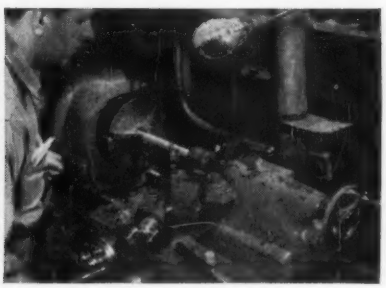


Ryertex-Omicron PVC is an exceptionally versatile industrial plastic with outstanding resistance to 281 corrosive solutions and gases. Its light weight (only 1/6 that of steel) and its great strength are but two of its money-saving advantages. It is nontoxic, noncombustible, nonmagnetic and nonsparking. It is immune to weather, rotting and aging.

# PVC comes in the forms you need







You can choose PVC pipe in sizes from ½" through 14". Valves, flanges and fittings are precision-made by injection molding. Bars and sheets are fully extruded, not laminated.

The techniques of fabricating PVC are similar to those for metal. PVC can be cut, drilled, formed, bent, welded, threaded and machined ... is easy to assemble and install.

## A new way to cut costs

Application possibilities are virtually endless. New uses for PVC are being discovered nearly every day. A Ryerson plastics specialist will be glad to help you find out where you can cut costs with this remarkably efficient material. Phone or write your nearest Ryerson plant—now! Send the coupon for our PVC booklet.

**Free booklet!**

Joseph T. Ryerson & Son, Inc.
Box 8000-A, Chicago 80, Illinois

Please send me a free copy of your PVC Bulletin 80-3.

Name_____

Company_____

City_____ Zone____ State_____

**RYERSON STEEL**
INDUSTRIAL PLASTICS AND BEARINGS DIVISION

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

For Faster and Better Clean-Up

USE

KLENZADE

DETERGENTS AND BACTERICIDES

CBS CLEANER

Exceptional emulsifying and saponifying powers scientifically balanced with rapid-action wetting agents for thoroughly removing stubborn fat and soil deposits. Ideal for hand cleaning of cookers, vats, fillers, etc. Rinses clean and bright. Tops in its field.

KLENZADE HC-6

Highly popular general cleaner especially useful on all wood and metal surfaces, tile, concrete floors, general processing equipment, ovens, hoods, etc. Rapid removal and dispersion of grease and heavy soil. Leaves no scum; rinses freely. Safe for hands.

FLASH-KLENZ

Non-corrosive organic acid detergent for cleaning high temperature equipment. Completely neutralizes and removes baked-on mineral deposits. The latest scientific approach to lime or "stone" dissolution. Eliminates abrasive methods.

KLENZADE XY-12

Concentrated sodium hypochlorite solution for bactericidal use in food plant operations. Rapid and effective for sanitizing all types of equipment. Clear solution, always ready for use. No dissolving or settling necessary. Leaves no sediment or residual film.

SPECIAL DETERGENTS

and equipment for high temperature and heavy duty cleaning. Also fog sanitizing equipment and steam pressure cleaning.

Offices in Principal Cities

KLENZADE PRODUCTS, Inc.

BELOIT, WISCONSIN

# COMMENTS & QUESTIONS

## Objections to Flowmeter No Longer Valid

Dear Editor:

Your article, "New Sanitary Flowmeters Bring Automation Nearer" (Oct. p. 72), was read with great interest here. It should attract much attention in food circles.

However, the list (p. 74) of objections to the Pottermeter does not take into account the following design changes:

1. The two openings in question have been widened to admit an ordinary brush. So the need for a special cleaning brush no longer exists.

2. We, too, use a simple air eliminator where entrapped air is present.

3. In an industrial application, we are now metering liquid sugar of 110 centipoises with our usual high accuracy.

4. With the Pottermeter, it is possible to have your readout in a remote location where an environment of high moisture and stray magnetic fields is non-existent.—*Henry S. Evans, Advertising Manager, Potter Aeronautical, Union, N. J.*

Dear Reader:

Your design changes certainly are significant. Thanks for bringing them to our attention.—*The Editor*

## You Can, Too, Pack Mayonnaise in Aluminum

Dear Editor:

I have recently read with quite a bit of interest your article, "Gauging the Boom in Rigid Foil Packaging (FE, Sept., p. 80). There is, however, one statement to which I take exception. It appears under the heading, "Performance Vital to Packers."

This statement says that mayonnaise and salad dressings should not be packed in foil containers, regardless of whether or not they are coated. We can say one thing very definitely. Aluminum containers without coatings should not be used to package either of these products. But we have developed satisfactory coatings which will adequately package these products.

At the present time, there are no commercial applications of aluminum containers for mayonnaise and salad dressing in this country. However, the packaging of mayonnaise in aluminum collapsible tubes has been commercial in European countries for many years.

In this industry, I am quite sure you appreciate, there is no such thing as "cannot."—*Robert H. Tooker, Packaging Section, Sales Development Div., Aluminum Company of America, New Kensington, Pa.*

Dear Reader:

Thank you for contributing this interesting information. It was not revealed when FOOD ENGINEERING surveyed rigid foil applications among food and aluminum container companies. Incidentally, your comment on the use of aluminum tubes in Europe is substantiated by the FE article, "Europe Accepts Food in Tubes" (March, '56, p. 60).—*The Editor*

## Shocked by Statement About Thaw Indicator

Dear Editor:

I was shocked by your statement, several issues ago, that "It is understandable that there might be some reluctance to employing a thaw indicator in such a way that it would be seen by the consumer, no matter how desirable it might seem from a quality-control viewpoint".

This was in answer to a letter written to you by Mr. Howers, President, St. Eloi Corp.

It is inconceivable that any manufacturer of frozen foods would prefer to take the blame for faulty foods direct, rather than to have it placed upon the faulty link in the distribution chain. Surely, the consumer should know whether an article is fit food or not. If it is not, she would not purchase it; therefore, the party who failed would have to take the loss.

For years my wife has not purchased as much frozen food as she could have, primarily because of the several bad experiences she had. Particularly is this true in respect to the items of one of the larger manufacturers of frozen foods, whose products she will no longer tolerate. Also, she has found that it does not pay to purchase frozen strawberries.

In the early days of frozen foods, I thought of a small, colored, frozen trademark, visible to the buyer, which would disappear when thawed —or some similar simple device.

Certainly, such a device is inexpensive and would definitely prevent

For a manufacturer to have his product seen in all its luscious goodness—what an advantage that is! Particularly when additional flattery is provided with a Brockway Glass Container. It invites purchase on sight. It says to the ultimate consumer, we have nothing to hide.

Brockway provides the finest glass containers in the world . . . and it provides too, a friendly, cooperative organization . . . an organization that retains interest and responsibility until it is convinced that the container it provides serves the purpose for which it is intended, to the complete satisfaction of the manufacturer. Try Brockway and see for yourself.

SYMBOL OF QUALITY · GLASS CONTAINERS

**BROCKWAY GLASS**

**COMPANY, INC.**

**BROCKWAY, PENNSYLVANIA**

*Sales Offices in Principal Cities*

**Subsidiary—Demuth Glass Works, Inc., Parkersburg, W. Va.**

***Plants:* Brockway, Pa. • Crenshaw, Pa. • Lapel, Ind. • Muskogee, Okla. • Freehold, N. J.**

Beautyrest
A Famous
SIMMONS
Product
Dixie Belle
CHENILLES
BEST OF THE POPULAR-PRICED CHENILLES
Dixie Belle
CHENILLES

# Leading brands of household goods are protected by Mead container board

From the seven large paperboard mills of The Mead Corporation flow thousands of tons of top-quality container board each year. Converted into strong shipping containers, Mead board protects a good share of America's household goods from point of production to ultimate destination.

Continuous product research has underlined the top quality of Mead virgin kraft liners and semi-chem corrugating medium. For example, Mead was the leader in developing the now famous and widely-used semi-chemical pulping process of short, strong hardwood fibres for corrugating medium. The use of these hardwood fibres upgraded the strength of shipping containers and gave added protection to such valuable household items as sofas, chairs and mattresses.

**THE MEAD CORPORATION** Sales Offices: Mead Board Sales, Inc.
Cincinnati • Chicago • Detroit • Boston • Newark, N. J. • Lynchburg, Va.

**MEAD**
*container board*

# New advantages for truck owners introduced in all-new Dodge Power Giants for '58

**Power, payload, economy and styling features make Dodge 4-way leaders of low-priced 3**

Recent introduction of the new '58 Dodge *Power Giants* brings truck owners a series of the most outstanding advances in Dodge truck's 40-year history.

**In power,** for instance, Dodge offers three new *Power Giant* V-8's that provide up to 234 hp. . . . as much as 24% more than other low-priced makes. These extra-powered engines can take it easy under normal loads . . . keep going longer, too.

**Payload capacities are up** to an all-time high. Chassis construction features the elimination of excess weight while actually increasing strength. You get as much as ⅓ more payload capacity.

**When it comes to economy,** Dodge sweeps the field because of its exclusive Power-Dome V-8 engine design that reduces harmful carbon deposits. This improves gas mileage . . . practically eliminates the need for major engine overhauls.

**Dodge styling** gives truck owners a real prestige bonus. Striking dual headlights, massive new grilles and luxury cabs are exceptional highlights.

All in all, truck owners would be well advised to check into the '58 *Power Giant* line-up before replacing or adding units. These Dodge trucks are definitely four-way leaders of the low-priced three.

**DODGE *PowerGiants***

suppliers from re-freezing and selling any foods which had suffered prior to being placed in the retailer's cabinet.—*Eric N. Gilling, Gilling Engineering Co., Pittsburgh, Pa.*

Dear Reader:

Practical factors sometimes dictate less than ideal performance. It is not that any products are bad. Just that some have lost their top quality. Leading packers are deeply concerned about quality deterioration in distribution channels, and they currently are investigating conditions. Solutions ranging from thaw indicators to insulated containers certainly will be considered.—*The Editor*

## Slippery Floors

*Question—Here's a safety problem, which we do not think is uncommon: Our warehouse floors are of smooth concrete, which are partially coated with an oily film from high-lift tractors. One entire side, plus additional exits, are open.*

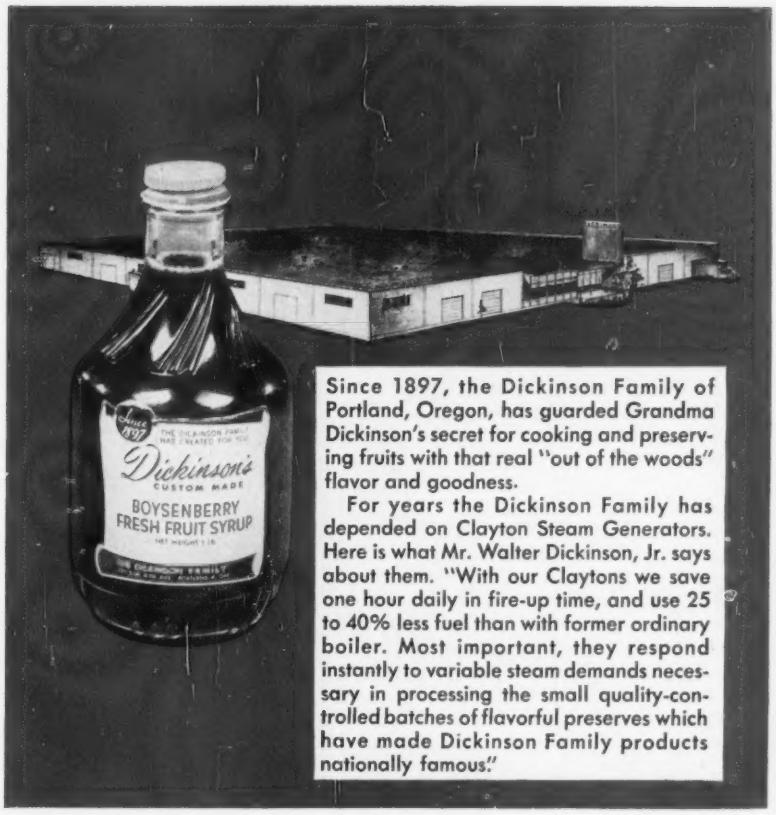
*As a result, the floors are dangerously slippery for tractor men and pedestrians whenever the weather is damp. Hosing the aisles doesn't help. We'd like suggestions.*

Answer—Our first suggestion is that you attempt to rid the floor of the oily film. We recommend use of a motor-powered floor-scrubbing machine, equipped with a stiff palmetto brush and used in conjunction with a heavy-duty industrial-type cleaning compound.

Our second suggestion is that you locate the source of oil leakage from your lift trucks. Certainly, it does these trucks no good to lose either lubricating or hydraulic oils. And it sounds as though you might have a maintenance problem on your hands to trace the cause of the leakage and correct it.

Third point of attack is to minimize the effect of weather conditions as much as is practical. We suggest building an overhanging protecting roof along the exposed side of the building, if you expect to continue using it for its present purpose for at least the next two or three years.

While the cost of such a roof might seem high to company executives, it should be compared to the potential cost of one serious accident involving a lift truck, which might well prove disabling or fatal. Looked at it in this light, the cost of a shipping-platform type of roof would

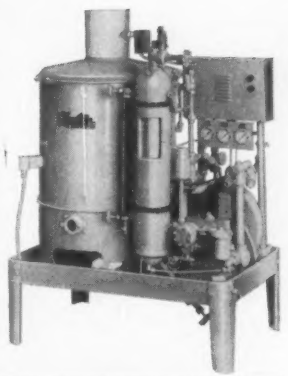




Since 1897, the Dickinson Family of Portland, Oregon, has guarded Grandma Dickinson's secret for cooking and preserving fruits with that real "out of the woods" flavor and goodness.

For years the Dickinson Family has depended on Clayton Steam Generators. Here is what Mr. Walter Dickinson, Jr. says about them. "With our Claytons we save one hour daily in fire-up time, and use 25 to 40% less fuel than with former ordinary boiler. Most important, they respond instantly to variable steam demands necessary in processing the small quality-controlled batches of flavorful preserves which have made Dickinson Family products nationally famous."

# CLAYTON HELPS DICKINSON FAMILY PRESERVE LIP-SMACKING FLAVOR OF FINE FRUITS

Buying Clayton Steam Generators is just smart business! These steam units produce more steam at less cost in only one-fourth the space occupied by ordinary steam boilers. They cost less to install too... no stacks to erect, no walls to knock out, lower rigging expense and lower hauling costs... and you can put them practically anywhere! The secret of Clayton's higher efficiency is *controlled circulation* and balanced feed, a principle of using a continuous single pass tube... thus, they are more reliable and easier to operate, maintain. From a cold start, Claytons produce steam in 3 minutes... and all day they produce only steam needed—instantaneously. Let a Clayton representative give you the complete facts.



**Clayton MANUFACTURING COMPANY**

Sirs:
Please send us more information on Clayton Steam Generators.

Name_____
Company_____
Address_____
City_____ Zone____ State_____
We use steam for_____

Send to: Clayton Manufacturing Company
447 N. Temple City Blvd.
El Monte, California




For more data, circle this page number on card at back →

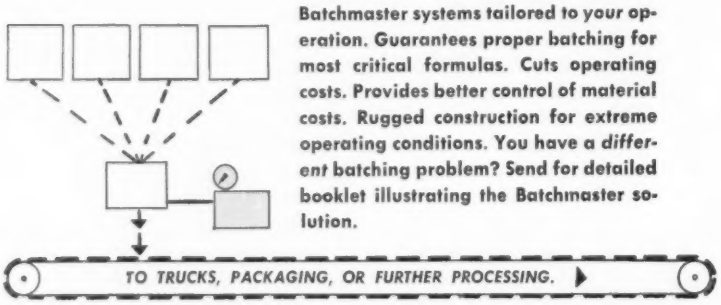
# PUSH BUTTON BATCHING

**BATCHMASTER speeds food processing**

**At last, completely automatic one-man batching for you. Batchmaster is the simple, speedy system for precise mixing of multiple ingredients to any desired formula. Accommodates all materials — solid, powdered, granulated, liquid. Provides *continuous* automatic control of all ingredients by weight. Boosts production, improves quality control, eliminates waste.**

*Simply dial the formula and mixing times, select number of batches, and press start button. Any number of ingredients are automatically fed, weighed, mixed and discharged.*

**No need for expensive, complex custom installations. Howe engineers *standard* Batchmaster systems tailored to your operation. Guarantees proper batching for most critical formulas. Cuts operating costs. Provides better control of material costs. Rugged construction for extreme operating conditions. You have a *different* batching problem? Send for detailed booklet illustrating the Batchmaster solution.**




*Write for Complete Details*

HOWE

THE HOWE SCALE CO. · RUTLAND, VERMONT
A SUBSIDIARY OF SAFETY INDUSTRIES, INC.


## Questions & Comments

probably be a very wise investment.

If, for any reason, you should still have slippery floor conditions after taking the above steps, our final suggestion would be to lay non-skid metal plates in the trucking aisles. To be sure that these are properly anchored to your floor, you may find it advisable to have a flooring contractor make the installation.

### Capping Dilemma

*Question—Recently, we've been having far too many complaints on 83-mm. threaded caps for one of our olive-jar items. These caps are manually positioned, then secured with small power-cap tighteners. First, complaints were on brine leakage, and later on caps almost impossible to remove by customers. Can you suggest what's giving us these difficulties and how they can be minimized?*

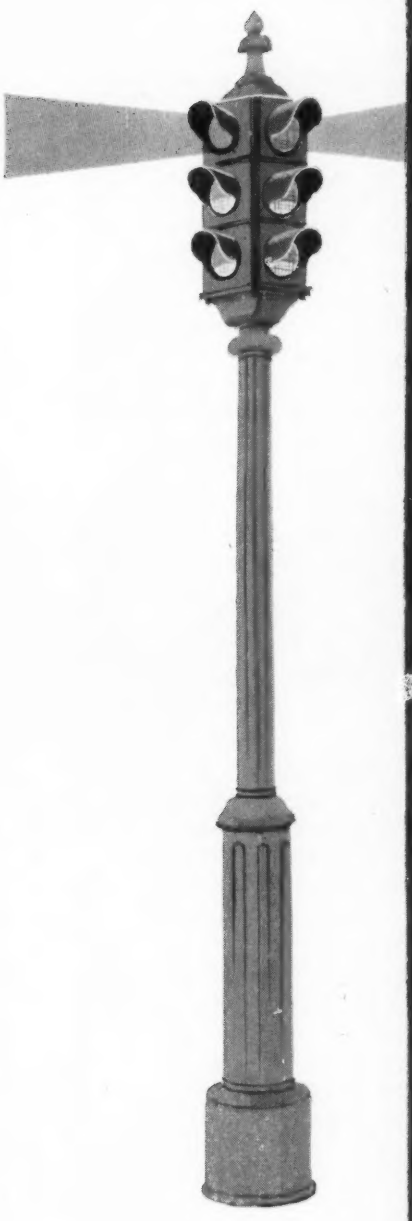
Answer—It is probable that part of the trouble stems from brine accumulations under the cap threads. Obviously, they can cause a cap to stick and become very difficult to unscrew.

It's advisable to check the brining operations to be sure that jars are not filled to overflow. Then provide wash water jets, directed at threads on jars just before capping, to remove as much brine spillage as possible. Following capping, direct small compressed air jets again at the threads to help remove remaining liquid.

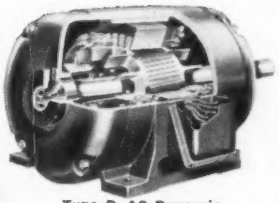
Power tighteners may be doing too good a job. And it would be well to check their performance by means of a torque tester. Application to just the right tightness is difficult to control on a production line. Perhaps frequent checks and careful instruction of line personnel will help.

A cap of such diameter often is difficult to remove for still another reason—vacuum in the jar. The large cap presents so much surface that atmospheric pressure is enough to hold it quite firmly in place.

Therefore, consider changing to a cap that preserves the re-seal feature (such as the vacuum lug cap), which is relatively easy to open by twisting only a fraction of a turn. A good feature (from an operating standpoint) is that this type of cap can be applied by a high-speed straight-line automatic capper. Such a unit may be rented if you prefer.



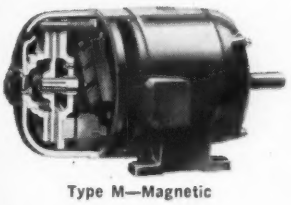
# GIVE YOUR PRODUCTS THE BEST OF BRAKES!



Type D, AC Dynamic

**ROLLING STOP**... Master Type D Dynamic Unibrake Motors. Braking is obtained with a unique, patented brake winding superimposed on the stator winding. Simple, compact, with no DC current required, the brake has no moving parts. There is nothing to wear or adjust... braking torque repeats consistently. Particularly recommended for automatic applications where static holding is not desired. Sizes ¼ to 30 H.P.

MASTER UNIBRAKE MOTORS



Type M—Magnetic

**STOP-HOLD**... Master Type M Magnetic Unibrake Motors. For quick, controlled stopping... especially when you want to hold the load. Spring-setting magnetic brakes of the friction disc type combine with motor in a compact, integral unit. Sizes... ⅛ to 150 H.P.

**MASTER GEARMOTORS** and variable speed drives can be furnished with Unibrakes, too. See Master for the perfect power drive for you.

## THE MASTER ELECTRIC CO.

DAYTON 1, OHIO

DIVISION OF RELIANCE ELECTRIC AND ENGINEERING CO.

# Accent Flavor-Gram

CAPSULED NEWS FROM THE WORLD OF FLAVOR

✓ DOCTORS TOLD TO SAVOR PATIENTS! In an article from "The American Academy of General Practice", March, 1956—doctors were told to prescribe flavor to diets; and, for low-salt diets, physicians could wisely recommend monosodium glutamate. It makes food tastier by enhancing natural flavors, yet it contains less sodium than salt.

✓ FLAVOR MAY CLINCH THE SALE BY '62. At a recent symposium on flavor research in Chicago, Dr. Raymond Stevens, president, Arthur D. Little, Inc., predicted that by 1962 flavor differences will replace packaging as the food manufacturer's most important competitive tool in selling new products. Currently, cheese products and beverages lead this trend.

✓ WHAT'S THE "EXTRA" PEOPLE WILL PAY EXTRA FOR? Blue Lake Packers of Salem, Oregon, will tell you that if you give consumers that "something extra in flavor", they'll buy your products even at a higher price than others. They started using Ac'cent brand monosodium glutamate in 1953. It has proven to be such a sales extra that today their entire line of "Jack and the Beanstalk" foods contain Ac'cent.

✓ A WHALE OF A DIFFERENCE IN FLAVOR! To sell more fish—"glutamate it!" says Gerald A. Fitzgerald, V.P. and Dir. of Donald K. Tressler and Associates. In a review of flavor research done in recent years, Mr. Fitzgerald cites a Chicago study which indicates that monosodium glutamate added to fish products largely restores their fresh flavor. He also cites a New Jersey panel test which proved that monosodium glutamate not only makes a "whale of a difference" in flavor, but in public favor. With the presence of monosodium glutamate, the consumer acceptance of frozen fish sticks, for example, actually doubled.

✓ FOOD FLAVOR—BIGGEST THING WITH CONSUMERS. More than 8,000 processed and prepared food items today contain monosodium glutamate. And here's why processors are adding this ingredient: Flavor counts with consumers, so they buy the best-tasting product in its price range. Ac'cent, pure monosodium glutamate, brings out food's high level of flavor freshness ... and holds this higher level of food's natural flavor throughout processing and shelf life.

✓ FLAVOR IS THE MAIN BUSINESS OF AC'CENT•INTERNATIONAL. New developments and happenings in the Food Processing Industry are just one of the many services we offer you. As the American pioneer of monosodium glutamate, let our experience, our qualified personnel, research and technical facilities help you solve your flavor problems. If you would like to know more about the news items reported here, just drop a line on your letterhead to Technical Service Dept., Ac'cent•International, 20 N. Wacker Drive, Chicago 6, Ill.

Accent® BRAND PURE MONOSODIUM GLUTAMATE

AC'CENT • INTERNATIONAL, Division of International Minerals & Chemical Corp.

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214 Front Street
San Francisco 11, Calif.
Tel. Yukon 2-1585

20 N. Wacker Dr.
Chicago 6, Ill.
Tel. Financial 6-1800

**B.F.Goodrich report:**

# Even fat from the fish fry can't damage a Koroseal belt

Photo courtesy of O'Donnell-Usen Fisheries Corp., Gloucester, Mass.

## *B.F.Goodrich improvements brought extra savings*

*Problem:* Nearly a million fish sticks a day ride that conveyor belt from the fryer to packing tables. Conveyor belts made of canvas or rubber used to be used on jobs like this. But there were problems. The warm cooking oil on the sticks soaked into the belt, made it hard to keep clean. Worse still, the oil made some belts get soft and sticky; it made others harden and crack.

*What was done:* The B.F.Goodrich distributor recommended a Koroseal belt when the fish stick processor opened a new plant. Because it's made of Koroseal flexible material, this belt stands grease, cooking oil, most acids—and just about everything else that ruins other belts. It resists cracking and peeling, never gets soft or sticky. There's no danger of contamination with Koroseal because it has no odor, no taste, never gets rancid.

*Savings:* Since cooking oil can't soak into Koroseal's smooth surface, the belt is a cinch to clean. Just a wipe with a damp cloth and detergent, and the B.F.Goodrich belt is as clean as a china plate. After two years, the Koroseal belt you see here still looks like new, is expected to give many more years of service.

*Where to buy:* Your B.F.Goodrich distributor has the exact specifications on the Koroseal belt described here. And, as a factory-trained specialist in rubber products, he *can* answer your questions about the many kinds of belting, hose, gloves, and protective clothing which B.F. Goodrich makes for the food processing industry. *B.F.Goodrich Industrial Products Company, Dept. M-251, Akron 18, Ohio.*

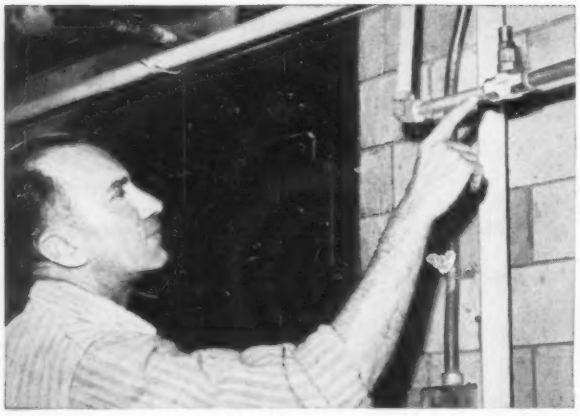
Koroseal—T.M. Reg. U. S. Pat. Off.

**B.F.Goodrich**
**INDUSTRIAL PRODUCTS**



For more data, circle this page number on card at back →

# "these steam traps save us 30,000 gals. of fuel oil a year"



*Yarways are responsible for cutting our fuel oil bill 20%*

**Q.** Mr. Melcher*, you've been using Yarway Impulse Steam Traps in this packing plant for over two years. What's your experience?

**A.** It's all been good. As a direct result of changing to Yarway Traps we save 30,000 gallons of fuel oil a year—or about 20% on our oil bill. Temperatures now stay hot and steady.

**Q.** Where do you have these Yarway Traps installed?

**A.** On all the steam coils for the smokehouses, heating exhaust fans and hot water generators.

**Q.** How about maintenance?

**A.** We haven't touched a Yarway Trap in the two years we've had 'em. With only one small moving part, there's not much to go wrong. Previously, with other traps, we averaged over $300. a year for trap maintenance.

**Q.** You'd recommend Yarway Impulse Steam Traps, then?

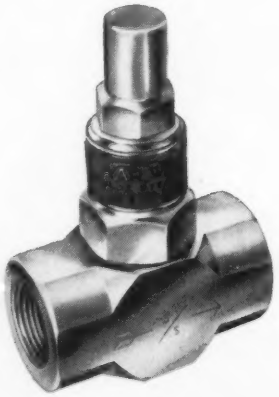
**A.** I don't have to. The record speaks for itself!

If you'd like a copy of a new booklet, "The How and Why of Steam Trapping", drop a card to

**YARNALL-WARING COMPANY**
127 Mermaid Avenue,
Philadelphia 18, Pa.

*We have Yarways on steam coils for all our smokehouses*

*GEORGE E. MELCHER,
*Chief Engineer,
large eastern meat packing plant.*



YARWAY impulse ...a good way to specify steam traps

OVER 1,200,000 YARWAY IMPULSE STEAM TRAPS ALREADY USED • STOCKED AND SOLD BY 275 CONVENIENT LOCAL INDUSTRIAL DISTRIBUTORS • NATION-WIDE YARWAY ENGINEERING STAFF AT YOUR SERVICE.

# More Things Than Marketing to Change in '58

One thing's for certain. The coming year will be the most exciting in the peace-time history of our industry—in marketplace, office, factory, laboratory, and distribution area.

Keener competition, rising costs, and receding profit margins are challenging everyone in the management group. Those who suffer from inertia will be worse off when this year has rolled over them.

What's coming in marketing is put into sharp perspective by leaders in the industry in a special FE report (p. 49). Business will be better for those that get their share. But marketing productivity must be improved. Special effort should be put into new product development, too. Why and how are nicely pointed up in the article on p. 53.

**Challenge of technical progress**

But marketing and product development are but a part of the challenging picture. Both aside from—and because of—requirements in these areas, changes must be made in packaging, manufacturing, engineering, and technology—yes, even in office operations.

In packaging, you'll see much accomplished with improved materials and containers. Polyethylene has become cheaper than cellophane, and its properties rapidly are being improved. Other plastics, coupled with fast on-the-line continuous forming methods, will make for considerable progress. Aluminum cans and aerosols are other things to watch.

Business in gourmet foods will accelerate. And there will be new packages and convenience products galore.

In manufacturing, much should be done to capitalize on in-stream analytical quality control tools. More will be achieved in recovering volatile flavor elements. Antibiotics may be used to preserve fresh fish. Dehydro-freezing will gain for institutional products. And progress toward commercial use will be made with freeze drying and irradiation.

New enzymes and new applications of existing ones will help to improve quality. You may see the cost of amino acids lowered, with protein enrichment of cereals becoming more feasible.

The battle for an additive amendment to the Food, Drug & Cosmetic Act will continue, with prospects of enactment. And in the area of government regulation, FTC may rap some frozen food knuckles.

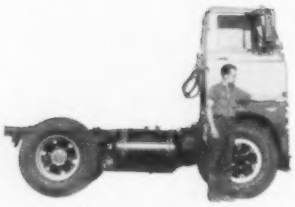
**Shipping and office costs**

Big strides will be made in distribution efficiency through automatic order make-up and handling, as well as "unitized" shipping.

Data-processing equipment will come into more extensive use in food factory offices this year. Not only is it a great cost saver, but it provides management with more information faster for closer control. Too little has been done to improve office efficiency. Here's a fertile area for cost cutting.

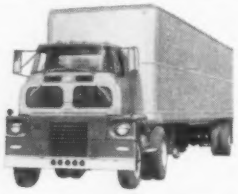
Labor cost will continue to rise, but manufacturers have an opportunity to take a firm stand. Labor's position has been weakened, though by no means broken.

There's much more ahead this year. But these examples should demonstrate the need to be on your toes.



**Load!** 48 inches from bumper to back of cab. *You haul up to 224 cubic feet more legal payload* – more than any other truck in its weight class – from city to city or coast to coast.

**Lift!** New pushbutton hydraulic lift tilts cab in less than 30 seconds. There's matchless engine accessibility. Service is easier, faster. You cut maintenance costs and down time.



**Go!** New V-8 power. Three all-new, all-truck V-8's to 257 hp.–up to 45 horsepower more than any other make. *The payoff:* more *go* with less shifting, tight-fisted economy, longer life.

**Look!** New visibility. See down 26 inches from bumper through two lower windshields for safer and easier city driving, plus high over-traffic vision. 1,708 sq. in. of forward vision!

INTERNATIONAL HARVESTER COMPANY, CHICAGO

Motor Trucks • Crawler Tractors
Construction Equipment • McCormick®
Farm Equipment and Farmall® Tractors

# NEW!...

## 10% more payload capacity!

## Shortest tilt cab, only 48 in. bumper-to-back-of-cab!

## Unique new visibility!

**Haul bigger payloads** today and in the future! Definite trends call for a *completely* different type of truck for profitable over-the-road hauling. Here it is—the new INTERNATIONAL® Sightliner!

With the 48-inch bumper-to-back-of-cab dimension you can pull the longest trailers or combinations, and operate with dromedary units. You get increased front axle loading, too. The short 28-inch bumper-to-front-axle dimension gives you maximum gross payloads under bridge formula restrictions . . . *everything* for the biggest payloads and biggest profits.

The INTERNATIONAL Sightliner tilt-cab tractor. GCW 50,000 to 65,000 pounds

*Fleet cost records prove* **International**

# Trucks cost least to own!



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# New lower-cost "dripless" can perfect for edible oils...

## Canco's **ACCU-POR** container

**At last** — a container that's just right for edible oils and many other liquid food products . . . a can that offers the user new convenience and neatness . . . a package that gives your product an important sales "extra" at lowest cost!

The Accu-Por container pours freely, accurately, yet won't drip a drop when righted. It is easy to handle, can't break, is light in weight. Because your label is lithographed all around the container, it has great eye-appeal! And remember: Canco offers brilliant metallic finishes . . . precision, full-color lithography.

Accu-Por containers are available in 16-oz. and 32-oz. sizes, priced as much as 25% below comparable cans.

Ask the Canco packaging expert today for further information about this remarkable all-metal container!

COME TO CANCO FIRST!

## American Can Company

*New York • Chicago • San Francisco*



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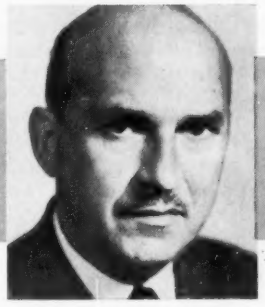
FOOD ENGINEERING SPECIAL REPORT

# TOP EXECUTIVES LOOK AT '58

**Sales gain seen sparked by population boom, new products, scientific research . . . But increased business costs will tighten the squeeze on profits . . . More output per man-hour, bigger return per sales dollar, should be your goals**



**Nathan Cummings**
**Board Chairman**
**Consolidated Foods Corp.**

**W. E. Robinson**
**President**
**Coca-Cola Co.**

**THE YEAR 1958 will prove an appropriate period for reappraising our policies and reevaluating our objectives.** In so doing, marketing functions will receive a searching investigation.

Many organizations will come to realize that they must be more selective in the choice of new products. Sheer economic necessity would seem to dictate this conclusion.

Factually speaking, it usually requires considerable capital investment to market a new product. Yet a large percentage of all new products introduced fail to last a year or more.

This is a staggering waste of capital and valuable man-hours, most of which could be eliminated if manufacturers would conduct their basic research and marketing on a sounder scientific basis.

**In critically evaluating their marketing policies, companies must place major emphasis on product quality.**

True, products today must be built to meet the increasing demand for convenience. But convenience should not be the determining factor. It must not be gained at the expense of sacrificing quality—for quality is the keystone of success for any product.

Another segment of the marketing structure which could stand closer scrutiny is selling. There is a definite need for more efficient selling.

We must learn to concentrate our efforts on selling bigger outlets—customers who can give us large volume orders on which we can make a profit. In short, we've come to the day of reckoning when members of the food industry must take every possible step to cut the unnecessary expenses entailed in servicing small orders for small accounts.

But problems such as the foregoing can be surmounted, and their solution will give us a more efficient marketing operation and greater increases in profits.

Food management must be flexible, more so now than ever.

**WE SHALL, I am confident, meet successfully our one big challenge:**

To expand sales volume so substantially, despite rising costs, that we continue to bring to the consumer a quality product well within his increasing personal income while asking him to share only a portion of our increased costs.

Thus, wherever a price rise may be necessary, it should coincide with a redoubling of sales promotion and advertising efforts to boost volume.

The soft drink field is a strong believer in advertising. Since 1950, soft-drink advertising has risen from 30% to 70% per case, and the number of cases sold has increased some 320 million. During the past decade per capita consumption of soft drinks jumped more than 25%.

**To make promotion efforts successful, we should analyze population increases and shifts, new living and buying habits, and new merchandising trends resulting therefrom.**

Chief among the many economic factors in our favor for 1958 is the continuing growth in personal income over increased living costs. The American people in 1958 will, I believe, achieve the highest level of personal income yet realized, with income gains continuing to exceed any cost-of-living increase, thus raising the consumer's capacity and desire to buy.

Other favorable economic factors, from which corollary benefits will flow, include: Expected reversal of the home-construction decline, a promising year for new car sales, a larger supply of capital in the open market, and a possible upswing in delayed construction projects by states and cities.

Recently there was a stock market decline. Some forecasts are for spots of unemployment. But it may be dangerous to postpone progress because of caution.

**He who hesitates may not be lost—but he may get a smaller share of the consumer dollar than that to which he is entitled.**

**A. E. Staley, Jr.**
**President**
**A. E. Staley Mfg. Co.**

**WE SEE no indication of any substantial changes in the over-all outlook for the food industry.**

On the favorable side, we have the pressure of increasing population. On the opposing side, there's some uncertainty on the degree of activity in durable goods production.

All in all, we expect the food industry to operate on its present relatively high plateau throughout 1958.

**George H. Coppers**
**President**
**National Biscuit Co.**

**MAJOR MARKETING trends in 1958 in the biscuit and cracker field will be in the area of new product and packaging development.** We expect a continuation of efforts on the part of manufacturers to build new convenience and service features into their products and packages.

Food companies generally must be concerned with the entire program of new product development. We have all learned that the life of a given product—and this extends to popular and established varieties—has been greatly reduced.

Consumers have a keen interest in, even a demand for, something new, something different. We must gear our research activities to produce a steady and orderly flow of new and improved products.

Our research must be expanded to provide wider and more thorough inquiry into new raw materials, new flavors, new textures, new packaging designs and materials, and toward improvement of our production techniques.

The big problem facing the entire industry is the matter of narrowing profit margins. To make headway here means an intensive survey of production and distribution costs.

We have made impressive gains in production efficiency in the past decade, only to see them swallowed up by increasing labor and material costs.

**We must examine closely every cost of doing business, and we shall have to find better, more efficient ways of conducting our operations.**

The food manufacturer can't afford to sacrifice or cut back quality of products or services. To progress, he will have to improve upon the way he does his job.

**H. F. Krimendahl**
**President**
**Stokely-Van Camp**

**MOST IMPORTANT function of the food industry is to gear production to consumption.** In the last two years, production has exceeded our nation's consumption rate.

A number of the more popular food items are selling at retail prices comparative to those of 20 or more years ago. **The industry cannot continue to absorb constantly increasing costs and survive.** The problem must be solved by the packing industry.

Sales will continue to rise in 1958, due to the increase in population. Whether prices go up or down depends entirely upon production planning.

For the past several years we have raised our sales and advertising budgets. However, it is doubtful that we can increase this expenditure further, since there is always a point of no return.

**Joseph Griesedieck**
**President**
**Falstaff Brewing Corp.**

**A SLOW beginning but a strong ending may be expected by business in 1958.** There will be a stronger balancing between the risks of deflation and the problems of inflation.

There may be some slowing of capital spending and greater caution in business commitments early in the year. However, these should be offset by, among other things, accelerated housing, greater defense spending, and more easing of money.

**To counteract any possible dampening factors in the brewery field, we are launching the largest advertising and selling program in our history.** One of the four largest breweries in the nation, we anticipate total sales this year in excess of a record-breaking 4 million bbl. in our 25-state marketing area.

Aware of the importance of flexibility in management planning in today's economic climate, we will go all out in 1958 to consolidate and solidify gains of recent years, rather than open additional major markets.

Rising costs continue to be a great threat to the future security of every American. Business must have profits to provide and maintain jobs.

Today's insistence on holding costs in line, coupled with greater productivity, efficiency, and increased sales, will determine the success of tomorrow's business.

**Wesby R. Parker**
**Executive Vice-President**
**Dr. Pepper Co.**

**GREATEST PROBLEM facing the soft drink field is the need for pricing which will produce an adequate gross margin.**

Additionally, we need clarification of the currently confused picture on soft-drink vending—exclusive vs. selective vs. pre-mix vending.

We need better store cooperation and support to keep pace with the trend toward home consumption.

Corrections and improvements in these areas will reward the company and its bottlers who develop the best answers.

**Charles P. McCormick**
**President**
**McCormick & Co. Inc.**

**BECAUSE WE ARE PLACING new products on the market, we expect an increase in sales.** These new products are the results of intensive research by our Research & Development Division working in conjunction with our Marketing Division.

Today, Mrs. Housewife desires a quicker way to perform her kitchen duties, and she is interested in foods that have a new appetite appeal. She is still interested in products of the finest quality, as long as her budget allows her the freedom to purchase them.

We are not anticipating any price increases, except on those commodities affected by imports. The cost of doing business, from wages and service facilities up to the ultimate consumer, will be up.

**We are hopeful that the stimulus of the new products will expand our present field and will give us that extra profit which will help to maintain low prices on high-quality merchandise.**

We are upgrading flavor and quality, and still maintaining the price—for 1958 is going to be a keen competitive year where quality will mean a great deal in the "repeat value" of merchandise.

We are increasing our sales and advertising budgets. This is based on the belief that pressure times are best for expansion, prosperous times for consolidation.

We look forward with confidence, yet with the realization that 1958 will be a very competitive year between brands, products, and methods of distribution. It will be harder to make a profit, although sales may be slightly higher.

**P. M. Jarvis**
**President**
**Swift & Co.**

**PROSPECTS in the meat field are encouraging, with ample supplies of raw materials forecast.** Total production will probably be about the same as in 1957, indicating volume and employment will continue to be favorable.

Pork production is expected to be higher. Beef production will decline somewhat, but will still be at a high level. The same holds true for veal and lamb.

"Abundance" is the word in the poultry field, with record broiler supplies expected. Plentiful feed supplies point to continued high-volume livestock production for some time ahead.

**In the broad picture, flexibility will be the key to progress, as the meat field adapts to changes and new demands.**

For several years, major changes have been marked in the whole food industry—changes in production methods on farms, processing in plants, and in all aspects of marketing.

Continued improvements in processing efficiency are certain to come. Added emphasis on research undoubtedly will bring improvements in products and processes, to help management meet the challenge of changing times.

**Paul S. Gerot**
**President**
**Pillsbury Mills Inc.**

**TWO MARKETING TRENDS which will become more dominant during 1958 are:**

First, a speed-up in the life cycle of food products on the market, resulting from the continued acceleration of our technology.

**To meet this trend, management must adjust its thinking to encompass those products which may be born, have a useful life, and be outdated all in a short space of two or three years.**

Second, a growing emphasis on increasing the efficiency of the distribution system. At Pillsbury, we expect to complete, during the year a new distribution system employing central warehouses at key points and electronic tabulating centers. This new system can handle an enormous volume of data in a single day, and will speed our customer service tremendously.

H. J. Heinz II
President
H. J. Heinz Co.

**KEY MARKETING TRENDS include the following:**

1. Continued effort to offset rising costs of containers, wages, transportation, etc., by improved operations and increased productivity.
2. Constant effort to develop new products, and continued research to determine consumer wants.
3. Continuing objective to improve existing labels and packages, including closures.

We expect retail food sales to expand by 4 to 5%.

Because of substantial feed-grain supplies, meat prices may decline. This may hold the retail food price index approximately at 1957 levels, although a slight increase of about 1% would be possible in the overall index.

# FE Summarizes '58 Outlook

## Sales seen climbing 5-7%

### Higher business costs may edge prices 2% upward . . . See 3% rise in ad budgets

WHAT CAN you expect in sales . . . prices . . . and merchandising in 1958?

To get you the answers, FE went to top food industry executives–asked them about their plans and hopes for the new year.

Key comments are printed on the preceding pages. Additional information received is summarized here with other trend indicators.

By and large, industry leaders–

**1. Expect dollar sales to continue their uptrend, increasing 5 to 7% over '57.**

**2. Hope to hold prices down, but concede they may be pushed up 2% by higher business costs.**

**3. Plan a small 3% up in advertising budgets to cover rising media costs, and intend to use their marketing dollars more productively than before.**

The expected 5 to 7% dollar sales gain seems attractive in the face of certain weak spots appearing in the general economy. However, figured in here are: (1) A 1.6% expansion in population (up from 170.8 million people in '57 to 173.6 million in '58), and (2) a possible 2% rise in prices.

In addition to the population expansion–which automatically increases demand–industry executives see two other factors encouraging a sales uptrend: New products and marketing research.

With consumers better educated to appreciate something new, improved, and more convenient, you'll see additional food products that meet those qualifications vying for limited shelf space.

Milady's insatiable appetite for new products has already inspired a number of firms to branch out into product-types not associated with their usual lines.

What new products can do to spark sales is attested by General Foods and General Mills (see p. 53). GF, for example, cites new items as accounting for 35% of its sales, and GM says 25% of its sales last year came from products it didn't have 10 years ago.

Greater emphasis on market research is also looked upon as a door opener to plus-sales. More companies this year will dig deep into the whys and wherefores relative to customers, markets, sales methods and advertising.

Principal aim of this research will be more efficient marketing. Here are some of the vital factors triggering such research–factors that challenge your own operation:

**1. Private label growth.** Note that although Safeway, formerly a leader in the private label movement, is muting its opposition to advertised brands, A & P and many other chains continue to affix their own name to a wider range of products.

Challenge here is to establish a stronger brand loyalty, with more efficient pre-selling promotions, so that you gain a franchise on valuable shelf space.

**2. Cost squeeze on profits.** Unable to pass along increased costs in the form of higher prices because of today's keen competition, you'll have to contend with narrowing profit margins.

The only ways out of this dilemma are more efficient manufacturing, packaging, and marketing. You'll have to get more return per sales dollar just as you lower unit production costs by getting more output per man-hour.

**3. Concentration of more retail volume in fewer stores.** As shopping centers become more important, and supermarkets bigger, fewer stores do more of the total business.

The 90,000 food stores that did 70% of the business in '48 had dwindled to 50,000 by '54. Two years from now, 25,000 stores are expected to handle the 70% share.

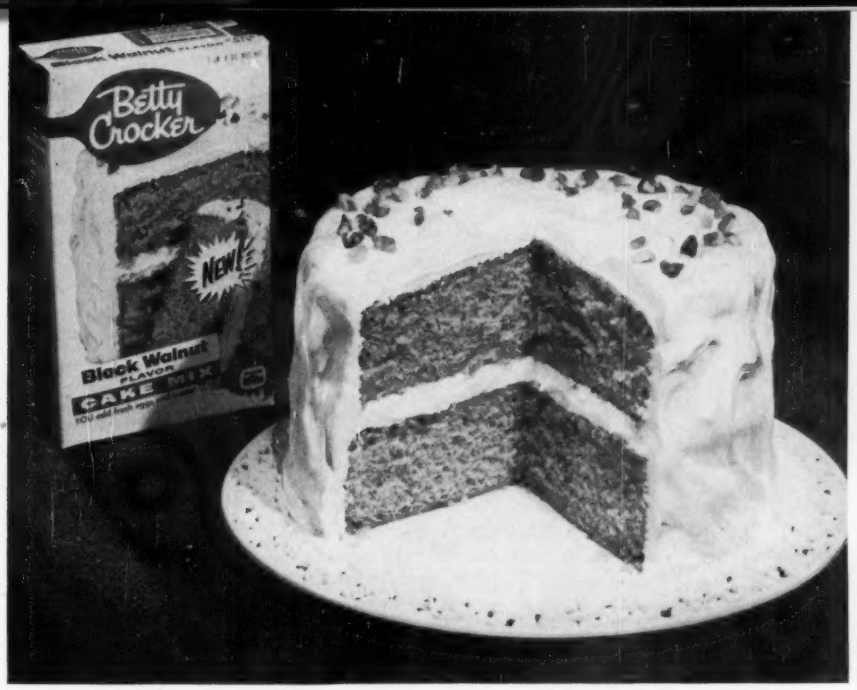
With fewer stores to sell to, you'll have to make sure your trade relations are such that your new products will stand a fair chance of being put on the shelves for consumers to see.

**4. Non-foods competition.** Annual non-foods sales in supermarkets, placed at around $4.5 billion, are nearly seven times what they were 10 years ago.

Furthermore, latest developments indicate that a wider selection of nonfood items–including higher priced electrical goods, such as TV sets–will be vying for consumer dollars. This means that you'll face broader competition. You'll be battling other industries, as well as other food manufacturers.

Remember that shoppers will buy non-foods on impulse, too, leaving fewer dollars for food items.

All this points up what should be your marketing philosophy in '58–a dynamic program designed to provide better ways of doing things. **–F. E. Staff**



**HARRY A. BULLIS**, the author, points up the challenge of the times, looks into a bright future with confidence, and orients new-product development as a challenge and opportunity. He gives you vision, valuable facts, and practical tips.

# New Product Development Key to Success at General Mills

**Progress geared to innovations that capitalize on economic trends and on shifts in consumer age, education, and eating habits. Steps in successful product development and evaluation outlined**

America's standard of living is climbing. There is every reason to believe that it will continue upward in the next decade, and its rise will follow closely development of new convenience foods and the broadening of the food industry.

Advances in food processing have always helped to power the nation's movement toward better living. They will undoubtedly do so in the years ahead.

To the food processor, this presents both a challenge and an opportunity. His success will depend more on his ability to create, innovate and improve the quality of his products and services than on his mere ability to produce. As he turns out more complex foods, he must also increase his capital expenditures.

Fifty years ago, for example, a flour miller was just a primary food processor. Today, he is not only a miller, but a producer of a wide variety of semi-finished flour products with built-in convenience. His investment has expanded to meet his expanded function, and it will continue to expand further.

General Mills has long anticipated this modern challenge in its planning. The company was formed in 1928 as the result of the long range thinking of its founder, James F. Bell. Mr. Bell visualized a nationwide organization, built upon a solid foundation of flour milling, which would have the capacity to add new food products from time to time.

And why stop at foods? Such an organization would have growth potential and flexibility to accommodate itself to the needs of an expanding economy. Mr. Bell was one of those who refused to accept the theory that our economy was mature.

Since the turn of the century, per capita consumption of flour had shown a downward trend. The total volume of flour consumed has remained markedly stable, with population growth offsetting the decline in per capita consumption. But the flour business alone offered little opportunity for growth. Bread was being replaced by other foods in the individual diet. Why shouldn't part of that replacement be products of cereal grains or flour in forms which would have greater taste appeal or other attractive features?

Vision becomes reality only when it is supplemented with intelligent, imaginative hard work. New and improved products do not come into being spontaneously. There must be climate conducive to the birth and development of new product ideas. And so the General Mills Research Department came into being.

To visualize what research and

new product development have done for General Mills, we need only to look at a report issued 25 years ago. It featured a large number of bakery flours, a few feeds, Gold Medal "Kitchen-tested" flour, and only three nationally distributed package foods—Wheaties, Bisquick and Softasilk Cake Flour. Now there are some 30 package foods. These include refrigerated biscuits, improved animal feeds, special baking mixes and cereals for hotels, restaurants and plant cafeterias, chemical products made from vegetable and animal oils, a variety of starches, glutens and guar gums, soybean products, cellulose sponges, electro-mechanical equipment and steroid intermediates.

Our researchers started with the basic facts of food consumption. On the average, people eat about three quarters of a ton of food per capita every year, measured on a weight basis. To General Mills as a food processor, this simple fact has significant implications.

We obviously cannot expect the gross per capita consumption of food to increase. The increase in population is an important factor. But its effect on our basic product, flour, has been offset by declining per capita consumption. How then is our business to grow—especially in a field as highly competitive as foods? It is evident that we must offer a continuous stream of new products which have greater appeal than existing foods. And we must work unceasingly on existing products to make them more attractive and easier to use.

## Product Requirements

**If it is to be successful, any new product must fill some need or want. This leads to the simple deduction that the way to plan new food products is to find out what consumers want and supply it.**

The trouble is that consumers themselves usually don't know what they want. A good example is the survey conducted before LIFE magazine first appeared. It revealed that few people were interested in buying a magazine with its format. We have conducted similar surveys among Betty Crocker followers—and even among professional people—with results that had little value. We soon learned that people are able to tell us very little about their future behavior in buying or using a proposed product.

**We concluded that we cannot just ask customers what they want and then make it for them. It is not that easy to research something new.**

**SHUNNED BY HOMEMAKERS** because of time and work involved, coconut macaroons now can be made quickly by anyone. General Mills prepared mix is the answer—a new product wanted by consumers. Finding out what homemakers want and supplying it is a requirement of new product success.

General Mills has developed guides for planning its new products and product improvement work. Our program recognizes the following basic principles:

**A new product (or improvement) should reflect and anticipate the needs and possible changes in the habits of consumers. It also should reflect and anticipate: (1) Changes in market conditions. (2) Developments of competitors. (3) The competitive marketing needs and profit needs of our company.**

These are broad goals. They tell us what the end results should be. But how do we get there? Where do we start?

A bit of day dreaming may help, because a new-products program must have a strong dash of imagination. For the long pull, however, research people have to roll up their sleeves and get the work organized and under way.

## New Product Approach

Methodology makes possible a sound attack on a problem. It directs the imagination into the most promising fields. It helps the research team guard against overlooking obvious, near-at-hand possibilities.

First of all, General Mills is a flour miller. We convert wheat into food products. Our greatest responsibility is to provide flour and other grain products in forms most convenient to the housewife.

The people of this country consume on the average about half a billion bushels of wheat annually. So our researchers took a basic approach to find out how people were using the products of that wheat.

Another approach was a massive study of what people are doing, with the idea of making their work easier for them. This was a study of the household operations performed within the home and the products used in getting the various jobs done. It has helped to pinpoint the areas where opportunities exist and to stimulate the imagination.

With the result of such market researching—and a free run of the imagination—a myriad of possibilities present themselves. Then come joint conferences between market research and technical research people and with management groups. Out of these conferences come the substances that our technical staffs can formulate into programs which are meaningful for management, and which engage their support and approval.

## How to Evaluate New Items

Every idea for a new product is evaluated against a check list of questions, such as the following:

**1. Will the proposed product improve the competitive and profit position of General Mills?**

**2. Is the product suitable to General Mills merchandising?**

**3. What is the probable cost of development, testing, and facilities for production?**

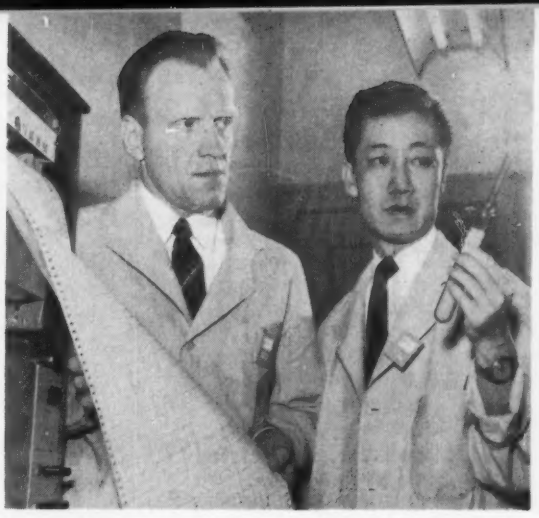
**4. Is the product patentable?**

**5. What appeal does the product have?**

**6. What is the market and sales potential?**

**7. How does it rate against competitive products in performance,**

**GAS CHROMATOGRAPHY** is effective tool for analysis of food flavor components in product development. Here an unknown flavor mixture is being studied at General Mills' Central Research Labs.



**INFRA-RED SPECTROMETER** (left) enables GM scientists to identify unknown organic compounds in foods. It aided in producing amino acids by irradiating ammonium carbonate contained in ampule being examined.

**use-advantages, volume and margins?**

**8. Does it have seasonal aspects in production and marketing?**

**9. Does it offer a new service or new experience to the user?**

**10. Will it increase the satisfaction of the customer?**

**11. Can we back it with a sound promotional plan?**

These are some of the facts we must face in developing new products. An unsatisfactory answer to any of the questions can mean that a product is doomed to failure even though it may look like a world-beater.

## After Idea Is "Accepted"

An idea which has passed the preliminary tests and reached the "acceptance" stage must then travel a tedius maze to the "finished product" stage. To start the technical work, a project is set up and the details, objectives, and merits of the idea explained to the scientists who are to work on it.

Then a technical program of development is laid out. During the development period, progress reports are made regularly to management. Meetings are set up at intervals for discussion of all phases of technical development, including evaluation of any tests made by panels or consumers. When the research project is finally completed, it is reported out to operating management. Typical is the standardized report on a new food product, covering 20 individual sections as follows:

(1) General development. (2) Consumer tests. (3) Storage and stability tests. (4) Recipes. (5) Product control suggestions. (6) Competitive products. (7) Potential market. (8) Formula. (9) Ingredient specifications. (10) Ingredient listing. (11) Packing specifications. (12) Processing specifications. (13) Manufacturing installation. (14) Suggested product names. (15) Merchandising suggestions. (16) Advertising suggestions. (17) Costs, prices and margins. (18) Patents and infringements. (19) Special contract and licensing agreements. (20) Capital expenditures.

The fact that this report is submitted does not mean that we are going into business, or starting production of the new product. Management has the responsibility of deciding whether the product is to be added to the line, where it is to be produced and the timing and manner of its introduction to the market.

## Big Future for Products

Why do we have confidence in the future? First, there is the basic fact that our population has increased from 132 million in 1940 to 170 million at the present time. It looks as if it will reach 200 million by 1970—a short 12 years away. Since the tonnage of food consumed per capita changes very little, we can expect the total demand for food to be at least 18% greater by 1970 because of population increase alone.

Of even greater significance is the trend in family incomes. Ten years ago the income of the average family was a little over $4,000. Today it is about $5,800. Economists estimate that by 1965 it will be close to $7,000. If we project to 1970 at the rate, we have $7,700.

Now, what does that mean in terms of dollars spent for food? Studies indicate that the rate of food spending averages about 25% of the family income. Of course, food expenditures tend to be a higher percentage of total dollars for low income families, and lower percentage for high income families, but the average comes surprisingly close to 25¢ out of every dollar over a period of years.

A decade ago the average family spent about $1,100 for food. Now that figure has risen to about $1,400. Allowing for the 15% increase in food prices indicated by the consumer price index, it is evident that the American diet has been upgraded. Since expenditures for food tend to parallel increasing incomes, it is reasonable to believe that diets will continue to be improved.

This steady upgrading of the diet carries with it great opportunity for the food industry. Ever since World War II, the American housewife has been demanding foods better nutritionally and in convenience and taste. Food manufacturers and processors have recognized these desires, and today we have foods that are better tasting, better in nutritional elements, with better packaging protection than ever before. And the answer to convenience is found in frozen foods, items for "instant" preparation, precooked products, and packaged mixes such as our Betty Crocker cake mixes. These have what is called "built-in maid service."

Families in urban areas generally spend a higher percentage of their income for food than families in rural areas and small villages. The trend of population away from farms and to urban and suburban areas is encouraging the food processor.

Furthermore, there is an increasing number of families with more

than one wage earner. Because of the relatively low birth rate of the depression years, there is a comparative shortage of young people entering the labor force. This will continue until the labor force feels the effect of the high birth rate of the postwar period. For the next few years there will continue to be a large number of working wives who will want high quality convenience foods as well as appetite appeal.

### Young Housewife a Factor

The housewives of tomorrow will be better educated and they will know more about the nutritional qualities of the foods they buy.

A recent USDA release contains this significant statement: "Younger homemakers tend to feed their families better, nutritionwise, than those in the fifties or older, according to a U. S. Department of Agriculture study of diets of rural families in 12 North Central States. Though the survey was made in 1952, these findings have been confirmed by more recent studies of diets of urban and rural families made by states elsewhere in the country."

Also it was found that older homemakers tend to use only a few foods instead of a variety which would furnish a better diet. Thus it appears that as the number of young homemakers increases, the American diet will be further upgraded.

Another important trend is the increase in meals eaten away from home. It is this trend that encouraged General Mills to develop and market a line of special baking mixes and breakfast cereals for hotels, restaurants, plant cafeterias, and institutions.

### Essentials to Success

**Four fundamental elements are essential to the success of a new food product—a sound idea, a market opportunity, a superior product, and effective marketing.** The General Mills program of new product development is built on long-range philosophy: Our products must stand the test of time.

We depend on the "research spirit" to keep us abreast of changing tastes and food habits and a little ahead of consumer desires. Our researchers and engineers are continually working to find ways of making good products better in quality and lower in cost.

It is a philosophy which brings success. —*End*

**SAFETY ACHIEVEMENT** brings award to management of Curtiss' No. 3 plant in Chicago. Key workers get appreciation cards.

# Management Makes

**Allocates insurance premium to divisions.**

PUTTING A DOLLAR SIGN on a safety program is sometimes hard to do. But improved operating efficiency, higher worker morale, and a near-perfect safety record are certainly money in the bank. It's that kind of bank account that the safety program at Curtiss Candy Co. is building.

Too few managements see that good safety practices pay off. Some call them a "necessary evil." And they treat them accordingly.

The fault lies with the front office.

Curtiss realized this, and switched the situation around. How? By setting up an incentive system and safety program as well as pinpointing responsibilities.

The firm's method is to purchase a retrospective insurance rating plan (cost of insurance dependent upon accident claims), and then charge it to each of its major divisions.

This flexible plan serves a two-fold purpose.

**B. B. BRYAN and JOHN V. ZIEMBA**

Safety Director, Curtiss Candy Co., Chicago, and Associate Editor, "Food Engineering"

It provides added impetus to accident control because the initial premium is adjusted at the end of the year in accordance with claims' costs. A good accident-prevention year, therefore, will bring a rebate. A serious one won't.

Secondly, the plan enables the financial department to work out an accident-control incentive system and, thereby, obtain management's full cooperation in the different divisions.

### Costs Charged to Divisions

Until recently, charges for insurance made to the sales division did not reflect changes in vehicle-accident costs. This was changed after records analyzed by the financial department revealed a consistent decline in the number and severity of accidents in manufacturing—but not in the sales divisions.

Accident costs now are budgeted to the vice-presidents in charge of production and sales by allocation of insurance premium. And drivers receive awards for accident-free vehicle operation.

But giving the divisions a budget

SAFETY
AWARD
Presented to
THE MANAGEMENT AND EMPLOYEES OF
CURTISS CANDY COMPANY
— PLANT No. 3 —
CHICAGO, ILLINOIS
IN RECOGNITION OF THEIR OUTSTANDING
ACHIEVEMENT IN ACCIDENT PREVENTION
No disabling injuries for 582,286 Man-Hours
November 20, 1956 to July 11, 1957
THE ÆTNA CASUALTY AND SURETY COMPANY HARTFORD, CONNECTICUT

**AWARD RECOGNIZES** 582,286 man-hours without disabling injuries.

# Safety Programs Click

## Takes advantage of insurer's safety services

incentive was not enough. They had to be provided with the necessary "tools" to curb accidents.

Specifically, here's what they got: (1) a full-time safety director for plants and a safety supervisor for sales, (2) safety committees, (3) safety promotions, (4) specialized services from insurance company and broker, and (5) physical safeguards.

Plant safety director B. B. Bryan, who is directly responsible to the vice-president in charge of production, laid the ground work for the present program. In the 10 years he's been operating, accidents have been reduced 40%. A record of ½-million manhours without lost-time accidents has just been racked up by one plant employing over 800 workers. What's more, Curtiss' accident-frequency and severity rate is well below the candy field average.

The safety director coordinates accident-prevention activities of all plants and offices. He cooperates with the sales safety supervisor, Fred Weigert. Together, they maintain and analyze accident reports to determine causes and take preventive measures.

A report on each factory accident investigated is made in triplicate by the plant superintendent. He retains one, while relaying the others to the plant safety chairman and the company insurance manager. The latter, in turn, passes his copy to the safety director. Each report lists name of worker, date, how accident occurred, causes, and corrective measures.

The plant superintendent, along with foreman or forelady, check the cause and take steps to prevent recurrence. The safety chairman follows through by instructing workers, and safeguarding equipment. Curtiss' safety director also checks each accident and discusses it at the next safety meeting.

Plant inspections are carried out on a rotating basis by the safety director and—as a triple check—by the insurance broker (Fred S. James & Co.) and the insurance company (Aetna Casualty & Surety Co.). Usually, the director and Aetna make inspections monthly; the broker bi-annually. But either is available at a moment's notice.

The sales safety supervisor is responsible to the vice-president in charge of sales. It is his duty to circulate throughout the country to indoctrinate route salesmen on safe-driving practices, and to check the mechanical condition of vehicles. He also holds safety sessions in conjunction with once-a-month sales meetings attended by route salesmen in 40 states.

Aetna safety engineers attend these meetings, too. They show safety films, check mechanical condition of cars and driver ability, and issue reports to the safety supervisor.

New route salesmen are carefully screened. They first undergo a physical check-up for disabilities that may interfere with driving. Their backgrounds, too, are investigated by commercial organizations for personal matters likely to make them "accident prone."

Active safety committees in each plant run their own programs. Each is made up of department chiefs and foremen, and headed by a rotating chairman selected annually. Committees meet once a month to discuss accidents that have occurred, suggest safety improvements, practice use of safety equipment, and see new safety films.

### Specialized Services Used

Insurance premiums cover claims and specialized services of the broker and insurance firm. The broker attends periodic safety meetings, analyzes accident reports to get at the causes, makes certain Curtiss gets the necessary services, and acts as a liaison between both firms. Specifically, his safety engineers see to it that the services of Aetna are tailored to Curtiss' needs.

On call are Aetna's and the broker's specialists in hazards involving dust, fires, explosions, machinery, and chemicals. These experts, for example, analyze the explosion potential of molding starches and recommend safety measures. Blueprints involving extensive plant modifications are reviewed, and recommendations are made for fire-protection equipment, safeguards on machinery, and installation of production units. Inspections are made after installation, and reports are issued to the safety director.

Curtiss, of course, looks at safety from a humanitarian angle, too. It doesn't want workers to suffer physically from accidents or to lose earnings. For this reason, the company has adopted the "no room for accident complacency" attitude. It goes all out in its efforts to safeguard machines, install safety-proved equipment, and provide a safe working environment. —*End*

HERE'S THE LONGER LASTING

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*• We also manufacture a complete line of WEBBINGS and PURE SHEET RUBBER*



← For more data, circle this page number on card at back

**Ole Sage Episode**

**"The more the family is included, the better for all. Get the family on your team."**

# But—What *Type* of Employee Publication?

BATT BULWARK, impatient as always, pushed his plate aside. Cutting in on the leisurely small talk of his fellow Guff & Gripers at the regular luncheon meeting, he bellowed: "Let's get this subject of company communications off the ground! What I want to know is, which one costs the most?"

Barney Hasbrook pretended to duck. "Easy now with a question like that, Batt," he protested. "Why do you ask?"

"Well," grumbled Batt, "at the last meeting, Ole told us there's a bulletin board in every plant. And according to him, that is the cheapest means of communication. So I want to know which ones cost the most? They should be the best."

"Don't forget," Barney reminded, "Ole also said the boards *could* be worthless. So there's your answer—any communication that doesn't produce, costs the company the most."

"Then put it this way," said Batt, "for what communications do companies spend the most money?

"**And I still want answers** to the questions I raised last time," he insisted. He paused as the waiter placed dessert and coffee before him, then boomed: "Remember? I asked: 'What in general is the cost of communications? Are results worth the cost? What's the comparative value of each type? And which ones are the best?'"

"I'd say," ventured Milt Sorenson, "the most money is spent on employee magazines and newspapers. Am I right, Ole?"

Ole Sage pushed aside his dessert to reply. "American industry now spends on employee magazines," he estimated, "well over $100 million, but probably less than $200 million. That amount, I'll gamble, tops the cost of every other form of within-the-company communications currently employed."

"If you can gamble, so can I," Batt chuckled. "I'll bet that in this country there are a million firms, large and small, of one kind or another. Then he continued facetiously, "If I'm anywhere near close in my guess, that's between $100 and $200 per firm. Cheap at half the price!"

"Batt would make everything

**IVAN C. MILLER**
"Food Engineering"

***Be sure your publication has: Full backing by the boss, a sound policy, a first-rate editor***

simple," commented Si Worth. "But seriously, Ole, just how many companies do use employee magazines, or newspapers, or some type of bulletin regularly?"

"*Printers Ink Directory of House Organs* publishes this information about every three years," Ole said. "It reported more than 6,000 such employee publications for the year 1954. The total grows consistently.

"Now, it's my opinion," Ole continued, "that the annual P.I. study 'catches' the major employee publications. So assume that many of the letter-bulletin, fringe-type pamphlets slip through the survey net—say possibly as many as the number of magazines that were listed. Then the total number of regularly scheduled communications, say 12,000, is a small number of Batt's estimated million firms."

**"That's because they cost too much,"** Batt grunted.

"It seems to me," Ole advised, "that no attempt should be made to measure the cost of employee magazines or newspapers except in relation to results. Unfortunately," he lamented, "in too many cases, the results do not justify the costs."

"I sure would like to know how you go about measuring the results of any form of communications. Can you tell us that, Ole?" queried Ed Strong.

"That can wait," blurted Batt. "First, let's get some dollars and cents cost figures, regardless of results. And then you'll see that these luxury magazines are only for the big, rich corporations."

"The money cost of employee magazines ranges from more than $1 per copy down to a few cents," Ole advised them. "Annual investment per company ranges from a few thousand to over $150,000. If mimeograph and multigraph 4- to 8-page publications are included, an effective publication can be produced at from 2 to 10¢ a copy.

"In one respect," Ole admitted, "Batt is right. The larger the print order for the same publication, the lower the unit cost, and *vice versa*. So the more employees a company has the lower the cost per copy.

"However," he added, "according to a National Industrial Conference Board report, organizations with as few as 300 employees *have* put out printed magazines. Still smaller organizations can accomplish profitable results with a regular 4-8 page issue, 6 to 12 times a year, of a mimeographed or multigraphed bulletin. Preparation cost for this type of bulletin can be kept to a few thousand dollars per year."

"I've seen a few bang-up employee magazines which interested me very much," conceded Barney, "and I would guess they were read with considerable interest by many of the company's employees. But *I* can't get very excited over a 'mimi' job. How do you rate *them*, Ole?"

"I recall a monthly, letter-type bulletin," Ole answered, "that was never more than 2 pages long. It was issued and signed by the president of a small company with not more than 50 employees. But I am positive every issue was 'devoured' by practically everyone in the company."

**"Sounds like magic,"** Batt said skeptically, "or a rabbit in the hat. Tell us now," he baited, "what did these bulletins say?"

"Each month they reported the company's progress, summarizing costs—and sales margins on units—and profits. Also, the president estimated as fairly as he could, the prospects for the remainder of the year. When deviations from previously reported prospects came up, he told why with candor."

Ole paused to note Batt's disbelief, and the questioning looks from others. "You see," he explained, "in addition to paying union wages and benefits, the company divided with all employees a generous portion of the year's profits. I have forgotten the details of the plan, and just how it worked, but if you're interested, the method and the results of this profit sharing plan were reported in FOOD ENGINEERING, June '54."

"Well, that's a good plug for one of the shortest and simplest bulletin-type communications," remarked Milt. "What's at the other end of the scale, Ole? And give us facts on type, size, frequency—all the dope."

"I mentioned a National Industrial Conference Board study," Ole replied. "It was made only a few years ago, and includes reports from 248 companies. It took in employee publications with circulations from 300 to 500,000. Three-fourths of the magazines covered were printed on coated stock. A little over 40% were of the newspaper type."

Ole paused to scan his notebook, then went on: "Offset was used in a few cases, but letterpress printing predominated And 60% of all the publications were monthlies.

"For both magazines and newspapers, 8½x11 in. was the preferred page size. Number of pages per issue varied greatly—ranging from 4 up to 52. And though 8-pagers took 1st in preference, nevertheless they comprised only 14% of all the publications. Then he added, as he thumbed the notebook, "Here are a couple of interesting facts: Almost three-fourths of the magazines used color on the cover, but a good 60% *never* used color inside."

"How were the publications, in this C.B. report, distributed, Ole?" asked Barney.

Ole said regretfully: "Only half of the companies mailed publications to the employees' home. To me, the more the family is included in company-employee communications, the better for all. I firmly believe that an all-out effort to get the family on your team is more vital than an effort to get across ideas to employees alone."

"I have a question," Si Worth cut in. "Who in the company gets out an employee publication?"

"Usually it's the personnel department, or public relations, or both acting together. In the C.B. report," Ole explained, "60% of the publishing responsibility was vested in these departments. And even when publishing was assigned to some other individual or department, the responsibility was frequently shared with one or the other of these two departments—as *it should be*.

**"And right here,** while we're considering responsibility, I'd like to point out the three factors I consider most important in building the kind of employee publication that justifies its existence."

He paused for approval, then ticked them off on his fingers: "Number one, the whole-hearted interest and backing of the 'man at the top'; two, a sound plan or publishing philosophy; and three, a determined and qualified editor."

"That suggests more questions," growled Batt. "And already we have too many left over unanswered. As far as I'm concerned, they'll all have to wait until next meeting."

"I've got to get back on the job, too," said Si, rising to leave, "And I hope next time we can answer a question of mine: What *precisely* do you put in these company publications—and why?"

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## How the "Twin-Lobe" design works

Note: For clarity, the pumping action of only one rotor is illustrated and described.

**1** The rotor turning counterclockwise creates a suction drawing the material into the suction port. The arm forms a seal between suction and discharge.

**2** Material is drawn in behind the rotor. The arm, riding on the rotor, maintains the seal and also cleans the rotor each revolution.

**3** The rotor draws in a new volume of material with each 180° of shaft rotation, for positive displacement. A constant cavity is maintained from suction to discharge with no damaging pressure peaks.

**4** As the rotor completes a full turn, the material is forced into the discharge port. The arm prevents recirculation. The combined action of the two rotors set at 90° results in a positive, non-pulsating flow.

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# Computer

## Rapidly-changing conditions pose day-to-day strategy questions

**ELECTRONIC BOOKKEEPING:** High degree of automation inherent in Calpak's IBM 650 computer installation is indicated here. One person monitors entire installation. Control panel gives picture of whole operation at a glance.

**FLEXIBILITY** is keynote of Calpak's electronic computer program. Here is one section of 650 installation. Information from cards fed into unit in the foreground can be coordinated with data on tape units in rear, thus freeing computer from routine jobs.

UP-TO-THE-MINUTE facts on sales movement and inventories are essential parts of strategy decisions that often have to be made to counter unforseen developments. And if those critical decisions are not to be out-dated by the quick tempo of today's food industry, management needs the facts when they are red hot, before they become cold statistics.

Aware of this, alert food companies are giving more attention to business electronics for speeding the flow of pertinent data on operating conditions to men who make sales decisions. Electronic computors have provided the data-processing capacity to give management better control of sales.

California Packing, a pioneer in the use of electronic business controls, has achieved unusual results in this direction. Its executives have on their desks by 9:30 Monday morning a complete picture of sales and inventories for the preceding week. Equipped with this pertinent sales analysis, which is carried out by a high-capacity IBM 650 computer, management is able to:

**1. Have an overall concept of what is happening.**

This is especially important when your line consists of more than one product and you sell through several sales agents and branch offices. Keeping tabs on these various factors can tie you down to piles of bulky reports and leave little time for thinking out decisions that have to be made.

**2. Exercise closer control over inventories.**

Availability of plentiful stock is a key to successful promotions—if the merchandise isn't there for the consumer to buy, promotion dollars are wasted. Calpak's sales analysis enables management to make sure warehouse inventories in specific locations are sufficient for the extra

**C. R. HAVIGHORST**
Senior Associate Editor, "Food Engineering"

# Puts Sales Under Control

**So Calpak makes sure that top executives have all the facts quickly**

consumer demand that will be generated by special promotion campaigns.

**3. Get a quick picture of where sales are headed.**

Because the sales analysis program compares movement of goods with preceding periods and with comparable periods of the previous year, Calpak can quickly spot where sales are lagging. Extra efforts are then aimed at the weak spots.

**4. Clear the desks of time-consuming paper work.**

Taking advantage of the added capacity of the IBM 650 computer, Calpak was able to consolidate four reports prepared on conventional punched-card equipment into one report. This means less time spent on digesting information contained in various reports, more time on using the information to strengthen the company's sales position.

Calpak's sales analysis project is the latest step in a long-range mechanized accounting program (begun in 1945) aimed at keeping closer track of the company's far-flung operations. The analysis is built around an IBM 650 tape computer, the first installed entirely for private business record keeping. The computer makes up to 2,000 individual calculations a second, and it fires out information at the rate of 20,000 characters a second.

## Approach to Problem

Before it decided to make sales analysis the computer's first project, Calpak spent three years of continuous research on possible applications. During this time, the company, starting from scratch, built a top flight staff of 14 electronic computer programmers.

Rather than merely superimpose electronic computer applications over existing company procedures, Calpak decided on a systems analysis approach. That is, existing management reports were analyzed for the information they included, how they were used, and whether the same purpose could be achieved more effectively through a different procedure.

Basic to this study was a critical self-appraisal. Priorities were assigned on the basis of jobs where the computer could: (1) Do the most good, and (2) be applied with the greatest operating ease and efficiency.

Key factors in the company's operations, which any successful computer program had to accommodate, were these:

1. Annual sales volume above $300 million (sales for 6 months ending Aug. 31, 1957, were $155.5 million). This means keeping track of around $6 million a week.

2. Commitments and activities of 300 brokers and branch offices and thousands of distributors who handle the company's 90-odd products. Because on-hand stocks must reflect current market trends, management needs current information on sales and inventories of each product for each point in the marketing pipeline.

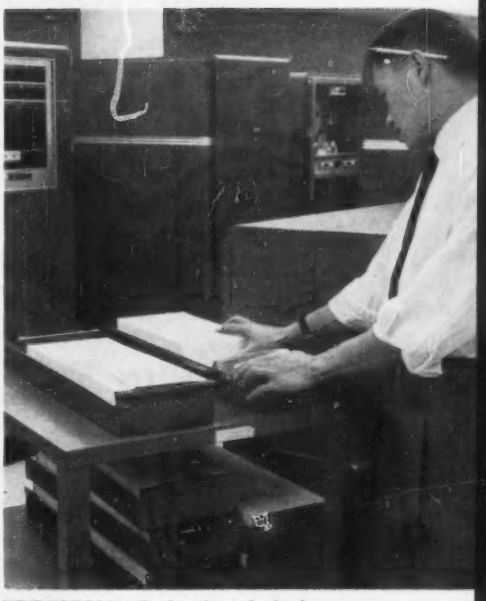
Several years ago, Calpak began organizing the assembly of all this data with an inventory-control accounting system that used punched card equipment. Applying the 650 computer to this system makes the information available faster and at less cost.

Here's how the system works:

Translating customer orders into invoices and sales and inventory statistics is done centrally by Calpak's data-processing center in San Francisco, where pre-punched detail cards are kept in tub files. For each order, clerks pull pre-punched cards incorporating full descriptions of the buyer and all merchandise ordered.

Accuracy is assured with a quick sight-check of the cards and the orders they cover. The only punching required for order entry—which is done automatically—are control holes to designate merchandise which has not yet been "ordered out."

Depending on the type of order at hand, cards are fed to conventional IBM equipment and written up in any one of three ways: (1) a sales memorandum confirming order for future delivery, (2) a shipping order covering goods to be delivered to a broker or distributor, or (3) an invoice which is written after shipment from the same basic cards used to prepare the shipping order.



**PRE-PUNCHED** detail cards feed necessary information to fast-action computer. When pulled from files, they are given quick sight-check for accuracy.

Computations are done on IBM 607 calculator, with the forms themselves written on an IBM 407 accounting machine. Detail cards used to produce either sales memorandum or shipping orders go to the 650 computer for entry into sales analysis statistical reports.

The memorandum cards are used automatically to enter merchandise commitments. The shipping order cards are actually reproduced copies of the originals, which, of course, are saved for eventual writing of invoices. These cards will be entered in the sales analysis calculations to show inventory depletions.

## Reports From Plants

To complete the basic data fed into the sales analysis cycle, cards are punched by hand to cover production reports received regularly from approximately 50 Calpak plants.

The 650 computer then digests the data on current pack, sales commitments, and shipments already delivered to give management working on-hand inventory figures.

For flexibility, the computer's out-

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put of data is coded directly to magnetic tape or punched cards. Conversions from punched cards to magnetic tape can be done "off line" to avoid tying up the computer itself on routine jobs.

### More Detailed Reports

Flexibility has been further increased by additional equipment, making it possible to read directly from magnetic tape into the 407 accounting machine.

Besides the over-all report on sales and inventories that executives receive each Monday morning, the 650 is used to produce three additional, more detailed reports. These include:

**1. Inventory and sales report for each variety, size, and package.** This report compares sales and orders to date for the current year with the previous year and the current week vs. the corresponding period of the previous year.

**2. Complete weekly rundowns on activities of each Calpak broker.** Quantities sold are compared with volume ordered out of the warehouse, the relationship between the two figures being expressed as a percentage. By comparing percentages for each product among several brokers, sales management quickly establishes activity "norms."

**3. A similar weekly rundown for each buyer served by each broker.** These make possible minute pinpointing of sales activity.

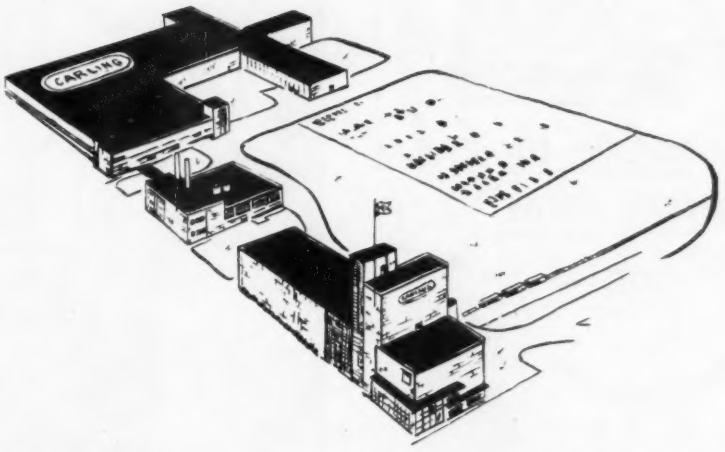
**Clearly, the computer's major contributions to sales analysis are in terms of scope and capacity. Considering the amount of data that can be digested and assembled into useful information, no operating report or statistic need be considered so complex that it is impracticable to compile it.**

To take full advantage of the computer's capacity, Calpak plans additional ambitious projects. The computer has already proved itself in the working out of a new disposition plan for the storage of canned goods.

Other applications planned include: accounts receivable, raw products accounting, inventory control, payroll, and cost accounting.

Calpak executives rate the need for additional information as being just as important as any operational savings which might result from use of the 650 (which carries a price tag of around $2 million). However, the computer is expected to pay for itself in three to four years.






**ON ATLANTA'S** South Expressway, Carling's new brewery—with its red brick walls and well-kept lawn—will symbolize changing pattern in beer marketing.

# New Plant Taps New Market

**Fast comer in brewery race, Carling goes after important Southeast area with lower freight rates as competitive weapon**

FREIGHT RATES often spell the difference between having a good market and no market at all. This is especially true in the fiercely competitive $2 billion brewery field.

To cut down transportation costs on hauls to the growing Southeast market, Carling Brewery is building a 350,000-bbl. plant in Atlanta. And it plans another in Baltimore, one that eventually will represent a $30 million investment.

Lt. Gen. A. R. Bolling (USA ret.), vice-president and general manager of the Atlanta operation, terms the expansion "a matter of bringing the mountain to Mohammed and saving Mohammed a lot of freight."

Carling, which climbed from 62nd to 8th place among brewers between 1949 (360,000 bbl.) and 1956 (2,996,823 bbl.) made the expansion move when sales caught up with output. Initially, nine states, including parts of Virginia and Kentucky, will receive shipments from Atlanta.

The new plant will enable Carling to tap important markets, including Miami. Even before the Atlanta plant began to take shape, Carling was opening markets in the Southeast at prices which will mean extra profits for distributors when lower freight costs go into effect.

Carling's Atlanta plant will be the only brewery operation in that area. Although Atlanta's only previous brewery was forced to close shop, Gen. Bolling is confident that modern equipment, resulting in a higher volume at lower production costs, will make the Atlanta operation a profitable one.

Other Carling plants are in: Cleveland (recently expanded by 1.8 million bbl.), Natick, Mass. (600,000 bbl.), Belleville, Ill. (700,000 bbl.), Frankenmuth, Mich., and St. Louis (now inactive but with a 700,000-bbl. capacity).

**CHARLES DIXON**
McGraw-Hill Southeastern News Bureau, Atlanta, Ga.

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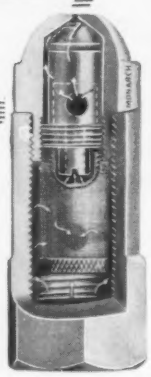

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# Sees Candy-Freezing Expanding Market

**Frozen confections may re-whet America's sweet tooth—which hasn't been up to par since '50**

BETTER STOCKPILING and sales expansion to distant markets are promised candy manufacturers by preservation through freezing.

Candy makers can steer clear of the production squeezes—that often develop before peak selling periods—by packing their product well in advance and putting it in the freezer.

J. G. Woodroof, chairman, food processing division, Georgia Experiment Station, reports that candy can be held frozen for as long as 9 months, then thawed and sold fresh.

As for the frozens giving manufacturers the chance to broaden their markets, one Chicago maker ships frozen candy as far as Miami.

Technologist Woodroof, whose experiment station has tested more than 500 kinds of candies at below-zero temperatures during the past 10 years, says that freezing is suitable for candies requiring: (A) Maintenance of high quality standards, (B) longer shelf-life, and (C) manufacture from 6 to 9 months ahead of sale.

However, he cautions that candy makers who plan to retail their product in frozen form should: (1) Check its suitability for freezing, also the economical need for freezing it, and its stability after thawing; (2) make sure the package provides protection against moisture changes; (3) explore formulas for new candies that lend themselves to freezing, and (4) eliminate the ones that crack during freezing.

If frozen candies are to be thawed and sold in fresh form, he adds, they must be thawed in unopened packages to avoid condensation on the surface.

Although storage rates vary, frozen candies can be stored in commercial warehouses for 9 months for about 3¢ a pound, Woodroof estimates.

If manufacturers can tie frozen candies to the frozen food bandwagon, they may reverse the downtrend in candy sales. Per capita consumption of sweets has tailed off from 18.4 lb. in 1950 to an estimated 16 lb. in 1956.

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Kingan's Meat in San Francisco has slashed packaging labor costs with phenomenal PRESSEAL, the carton that seals itself.

PRESSEAL carton flaps adhere to each other but to nothing else. The same easy motions that press the flaps closed also seal the carton for storage or shipment. No stapling, taping, or gluing equipment is needed, and no personnel is required to operate, maintain, or repair packaging equipment.

Using PRESSEAL, Kingan's Meat has speeded packaging operations and cut labor costs. So can you! If you're packing in a corrugated carton, you'll be packing better with PRESSEAL!

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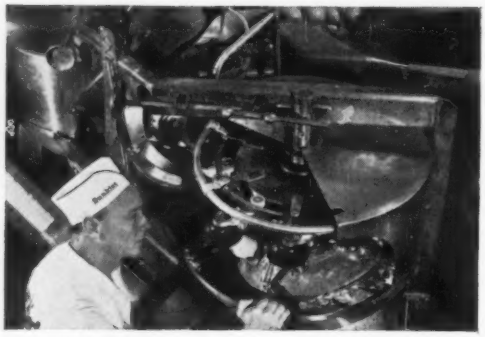
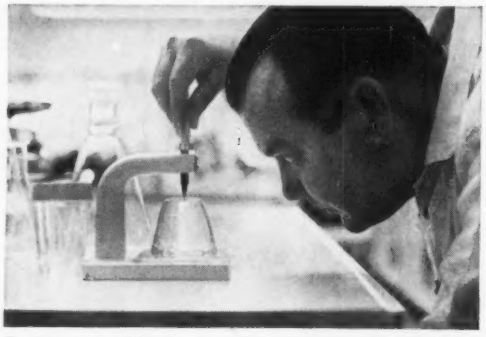
**One look** at the huge, sprawling buildings at one of the Exchange Products plants and you know that big things are happening inside. For here *citrus* is king. Trucks pour in with fresh fruit from groves all over California and Arizona. Conveyer belts hum along in every direction. And Exchange products are shipped to nearly every part of the world.

# Why 'Exchange' products serve you better



**Utmost cleanliness** is the watchword at Exchange Products plants. Everything has that "just washed-down" look. Every four hours, extraction equipment is completely cleaned. Every third day, the entire plant closes down for a thorough washing.



**Exchange quality** is assured by constant checking in extensive testing laboratories. In fact, rigid quality controls have been set up *throughout* the plant to make sure that every product measures up to Exchange quality. Sunkist produces more than 400 different citrus products.

**The world's largest** citrus research department is maintained by the Sunkist Growers to develop new growing methods, to improve manufacturing processes, and to perfect better products. Today, with a backlog of more than 60 years experience, Sunkist has accounted for 118 separate U.S. patents.

**Just three** of many Exchange products are *Exchange Preserver's Pectin*—guarantees a more uniform finished product; *Exchange Low Methoxyl Pectin*—jells *without* sugar, tasteless, controls "weeping" in pies; *Exchange Lemon Juice*—brings out natural flavor of *any* food. Superior acidulant, excellent anti-oxidant.

## Sunkist Growers

PRODUCTS DEPARTMENT • ONTARIO, CALIFORNIA

*Distributors for*

Exchange Lemon Products Co., Corona, Calif. • Exchange Orange Products Co., Ontario, Calif.

# CASE HISTORY OF MONTH

From files of *National Consumer Panel Division* of Market Research Corp. of America. Material is factually correct. Identities of products and companies have been masked to insure anonymity.—The Editors.

## Makes Wrong Move on Lagging Specialty

**Management's problem**

OUR PRODUCT'S market position on a national basis is static. What's more, our market position is very low in the geographical area where 45 to 50% of the volume in this commodity is consumed.

We have a high-priced specialty product. Should we continue it as such, and attempt to improve sales by increasing our investment in advertising and promotion? Or should we reduce our price to the level of other brands in this field, and compete as a "commodity" product?

### WHAT WOULD YOU DO?

**Management's decision**

We decided to compete as a commodity product, dropping the price as quickly as possible. Management made provisions, however, quickly to find out two things:

1. Was our price reduction immediately passed on to consumers?

2. How did the price reduction affect volume?

Speed was vital. Every day of doing business at the lower price would be very costly unless volume increased satisfactorily.

**Result of action**

The move was unsuccessful. True, the price reduction was passed on to consumers, this being proved rapidly by the weekly purchase diaries of families in the National Consumer Panel. But even though the lower price made the product more attractive, the brand's share of market, on a national basis, advanced only 2 points—from 11.0% before the price decline to 13.1% afterwards. In the geographical area where commodity sales volume is concentrated, the brand advanced from 3.5% to 4.6%.

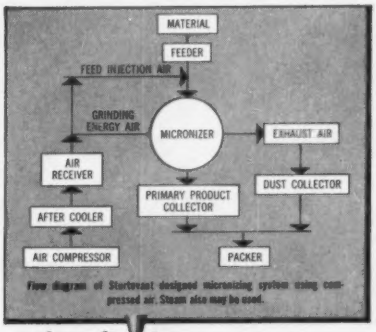
Management therefore concluded that the cost of the price reduction could not be supported by the moderate volume and share gains. So action was taken to restore the price.

*For more information, write to Case-History Editor, FOOD ENGINEERING, 330 West 42nd St., New York 36, N. Y. Your inquiry will be directed to source of case-history item.*

**You'll find more tips on better marketing** in "Top Executives Look at '58" (p. 49) and "New Product Development Key to Success at General Mills" (p. 53).—The Editors


## Need ½ to 44 Microns?

**Sturtevant Micronizers* Make 325 Mesh Obsolete**



Flow diagram of Sturtevant designed micronizing system using compressed air. Steam also may be used.

**One Operation Reduces, Classifies**

Sturtevant Micronizers grind and classify in one operation in a single chamber—provide fines in range from ½ to 44 microns to meet today's increased product fineness needs. Can handle heat-sensitive materials.

*Production Model (15 in. chamber)*

**No Attritional Heat**

Particles in high speed rotation, propelled by compressed air entering shallow chamber at angles to periphery, grind each other by violent impact. Design gives instant accessibility, easy cleaning. No moving parts.

**Classifying is Simultaneous**

Centrifugal force keeps oversize material in grinding zone, cyclone action in central section of chamber classifies and collects fines for bagging. Rate of feed and pressure control particle size.

**Eight Models Available**

Grinding chambers range from 2 in. diameter laboratory size (½ to 1 lb. per hr. capacity) to large 36 in. diameter production size (500 to 4000 lbs. per hr. capacity). For full description, request Bulletin No. 091.

**Engineered for Special Needs**

A 30 in. Sturtevant Micronizer is reducing titanium dioxide to under 1 micron at feed rate of 2250 lbs. per hr. For another firm, a 24 in. model grinds 50% DDT to 3.5 average microns at a solid feed rate of 1200-1400 lbs. per hr. A pharmaceutical house uses an 8 in. model to produce procaine-penicillin fines in the 5 to 20 micron range. Iron oxide pigment is being reduced by a 30 in. Micronizer to 2 to 3 average microns.

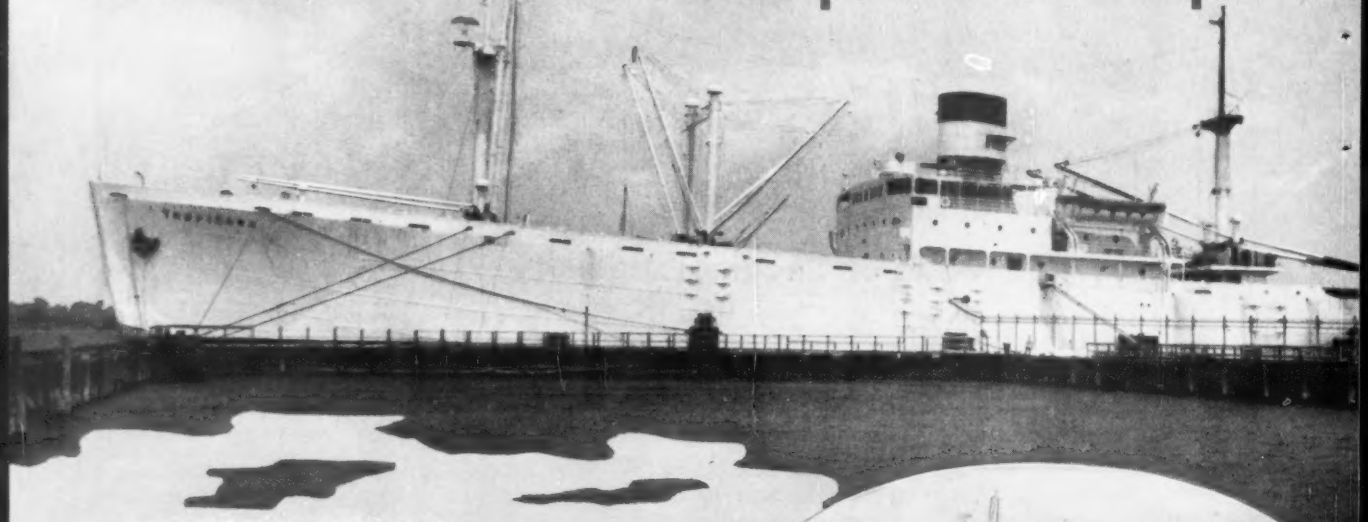
Sturtevant will help you plan a Fluid-Jet system for your ultra-fine grinding and classifying requirements. Write today.

**Can Test or Contract Micronizing Help You?**

Test micronizing of your own material, or production micronizing on contract basis, are part of Sturtevant service. See for yourself the improvement ultra-fine grinding can contribute to your product. Write for full details. STURTEVANT MILL CO., 106 Clayton St., Boston, Mass.

*REGISTERED TRADEMARK OF STURTEVANT MILL CO.

# *Orange Juice "Tanker"* handles cargo with TRI-CLOVER Stainless Steel Pipelines and Pumps



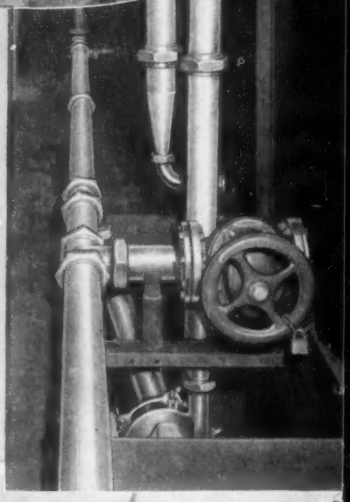
Named for the brand of orange juice it carries, the S. S. *TROPICANA* is an 8,000-ton cargo vessel now converted into "tanker" service for transporting some 650,000 gallons of fresh orange juice from Cocoa, Florida, to Whitestone, New York for its owner, Fruit Industries, Inc.

Only vessel of its kind in the world, the *TROPICANA* takes on and discharges its flavorful cargo via Tri-Clover Division 4-in. stainless steel "pipelines", sections of which are connected with "Tri-Clamp"® quick-action leak-proof clamp unions. On board the vessel, large-capacity Tri-Clover centrifugal pumps distribute the orange juice to huge insulated stainless steel tanks in the ship's cargo holds, where the liquid cargo is kept refrigerated, under vacuum, to preserve its freshness.

At the New York end the fluid cargo is piped ashore, stored and packaged in cartons for distribution—where numerous Tri-Clover stainless steel fittings, valves and tubing continually guard against product contamination.

Unusual, perhaps, but an excellent example of the way in which processors rely on Tri-Clover Division products to protect product quality, resist corrosion, and render long, trouble-free conveying line service.

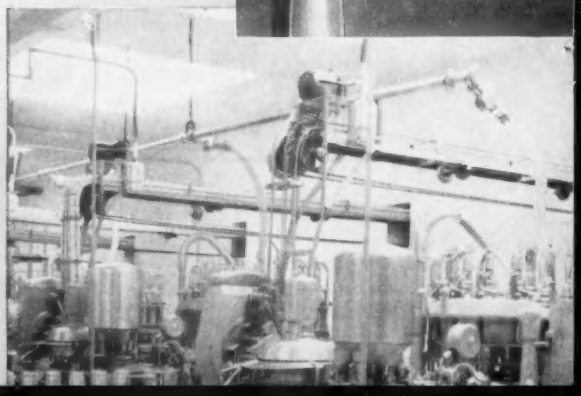
*See your nearest TRI-CLOVER Distributor.*



*Section of 4" O.D. stainless steel "pipeline" with Tri-Clamp fittings for transferring fluid cargo to shoreside tanks.*

*One of the Tri-Clover pumps and part of the Tri-Clover fittings used aboard ship to transfer juice in loading and unloading operations.*

*View of shore-based packaging operations where juice is again conveyed through Tri-Clover fittings, valves and tubing.*



EXPORT DEPT:—8 So. Michigan Avenue, Chicago U.S.A.—Cable: TRICLO

IN CANADA— Brantford, Ontario

**LADISH CO.**
*Tri-Clover Division*
*Kenosha Wisconsin*

S-857

TRI-CLOVER

## FDA Eases 'Buttermilk Bread' Ruling

Some of the strings FDA threatened to tie around marketers' hands in the "Buttermilk Bread" case (see FE Nov '57, p. 73) were loosened last month. The agency has at least temporarily retreated from its original stand against "made with buttermilk" labels.

In a notice to FE, Wallace F. Jansen, assistant to the FDA commissioner, says the agency will take the view that bakers can use the label if: (1) Sole moistening agent is buttermilk or the dried equivalent, (2) label so states when dried buttermilk is used, and (3) "no unwarranted interpretation or significance is created for the phrase . . . in the labelling or promotional material" that the bread has special dietary or nutritional properties because of the presence of buttermilk.

The FDA statement conceded it lacks the evidence for a definite decision on whether the phrase is false or misleading. The agency will use the above interpretation pending further developments and a study of the standards-of-identity question. This considerate handling of the problem is appreciated by the industry.

## Benefits Key Successful Selling

Salesman will close more sales when they sell customers on the benefits of product features, rather than the features themselves. So stated Armour Vice-President Walter Shafer at the National Food Brokers Assn. meeting.

Sales training programs will be more productive, Shafer said, when manufacturers instruct the salesman on: (1) Company policies that affect his job, (2) the benefits he will receive from a good performance, (3) the why, how, and when of necessary paper work, (4) details of job responsibility from the company and customer angles, and (5) fundamental steps involved in every successful sale.

## Steps Up Personal Contact

Making it easier for your customers to do business with you improves your trade relations, inspires your customers to sell more of your goods.

General Foods has set up a corps of sales service men in each of its 13 regional distribution centers to handle all customer inquiries related to sales. Under the new plan, each GF customer will have a contact man he can call on for answers to such problems as out-of-stocks, credit, damaged goods, billings, delivery schedules, etc.

Objectives: (1) Help warehouses hold balanced inventories, (2) promote better manufacturer-customer coordination, (3) make customer feel manufacturer is interested in his problems.

## Grocers Rate P-O-P Material

Cardboard shelf edgers, wire and metal stands, and cardboard stands are rated by food store retailers as the most effective point-of-purchase displays. A check of 24,000 grocers by S. C. Johnson & Son, wax maker, found 65% of the retailers use such material.

Next in popularity—used by 45%—were posters, banners, and shelf extensions. Rated poor: Can toppers, ad reprints, mobiles, window decals, and counter displays.

Ideal display, retailers say, must: Fit size requirements, be timely and eye-catching, enhance store appearance, and have an advertising theme suitable for local tie-in.

## 'Bouillon Break' Builds Profits

Taking a cue from coffee makers, American Kitchen Products is promoting the bouillon break idea to win consumer acceptance of its new Steero Instant Bouillon. Product comes in granule form, dissolves instantly in hot water.

Introduced last September, item helped company increase overall sales 15% last year, President Robert G. Janover reports. New product will account for a 50% gain in the company's sales volume this year, he predicts.

## BRIEFS

**Specialty breads and partially baked products,** such as dinner rolls, will help bakers consolidate recent sales gains, according to William M. Clemens, American Bakers Assn. chairman. Greater use of nutrition education in advertising promotions built around brand name and appetite appeal, he adds, will also help bakers to sell a larger product volume this year.

**Want a captive audience** on which to try new products? In-plant food service firms are always on the alert for new products, will prepare them to manufacturer's specifications, can tabulate reactions of plant and office personnel to whom they supply meals.

**More headaches for beverage bottlers.** Retailers on the Coast are complaining about costs of sorting returned bottles, want to shift expense to beverage makers.

**Coffee makers hope to perk up sales** by educating housewives to return to old-fashioned way of brewing. Reason: Coffee in the home today is made at the rate of 64 cups to a pound vs. 46 cups in '49. This has meant sales losses running to $500 million, Pan-American Coffee Bureau says.

**Switch to broker representation,** started a year ago by Ralston Purina's Ralston Div., paid off. Brokers last year exceeded all sales goals set for cereal and dog food products.

**More accurate home eating facts** are sought by a Market Research Corp. survey. Project, to cover menu patterns of 4,000 households, will run for a year. Aim is to uncover precise data on purchase, preparation, and consumption of food—to aid processors in planning new products and campaigns.

**UNITIZER** automatically builds up loads of cased beer without the use of pallets. This is one of the important materials-handling advances that cut brewery's costs.

# Puts Cost-Cutting Performance

**Highly synchronized bottling and canning lines, featuring advanced machinery and materials handling, up output and improve profits of Minnesota brewery**

PACKAGING and materials handling operations are expensive at best. They can be ruinously costly at worst. Because you can easily lose your profit between the process and the shipping platform, it pays to view your packaging department in perspective against progress—then do something about it. Here's a case in point.

When the new management at Minneapolis Brewing Co. took a good hard look at its bottling shop three years ago, it could hardly believe what it saw.

Much of the equipment was of 1910 vintage. Bottles were manually transferred all along the line at a mere 100-per-min. rate. And man-hour production was taking a big bite out of unit package expenses.

So, in short order, management went about modernizing the department with the latest high-speed packaging machines and handling equipment. And this change, combined with improved marketing and plant expansion, was to a large extent responsible for the immediate jump in profits.

Today, the well-engineered packaging operation comprises four bottling and one canning lines in which are combined top-flight machines for handling, feeding, filling, closing, labeling, cartoning, casing, and other intermediate operations. Packaging line flow is efficient. Packaging and materials handling are integrated. Unusual diversity in packaging is achieved.

Emphasis is on movement of packaging materials and beer to, through, and away from the lines so as not to retard production nor idle labor. What's more, the newly automated packaging systems have, through mechanization of manual operations, largely abolished hand labor.

**E. V. BURKE**

Bottle House Superintendent,
Minneapolis Brewing Co., Minneapolis

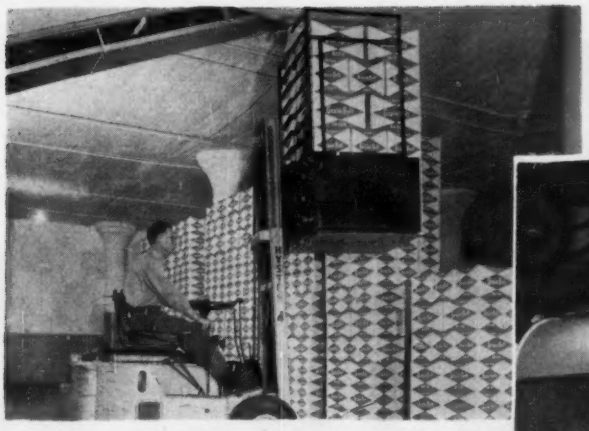
## Lines Completely Integrated

Formerly, packaging lines consisted of individual machines connected by a series of conveyors. Now, the machines are linked together to form an integral unit that conveys as it performs the operations.

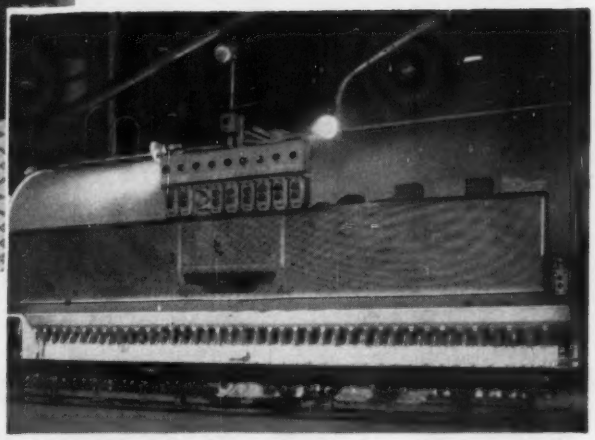
Now to specifics on the packaging systems.

**Canning Line:** This line operates at a speed of 430 cans per min. It starts at balcony level, where cans pass through a new RCA uncaser-sorter that replaces former manual handling.

From there, cans are conveyed to a 60-spout Meyer filler, then proceed to an American Can 8-R seamer and a single-deck Meyer pasteurizer



**LOADS** are picked up by 2,000-lb. capacity clamp-type lift truck, hauled to warehouse, and stacked.



**NEW 40-WIDE WASHER** handles 500 bpm. Washed bottles are separated into two rows, each traveling to a 60-spout rotary filling machine.

# Into Packaging

(12x55 ft.). Cans are then automatically loaded into 6-can carry-home cartons, with eight of these packed in a shipping case. Or they may go to the semi-automatic packer which deposits 12 or 24 cans in a case.

Cases are conveyed to an Alvey unit loader, which automatically assembles them in 36-case unit loads without use of pallets. Loads are picked up by a 2,000-lb. clamp-type Hyster lift truck and transported to one of two warehouse areas (120x 320 ft. and 120x120 ft.) for rail car or truck shipments.

**Bottling lines:** There are four of these lines—one each for 12-oz. "one-trippers," and 8-, 12-, and 32-oz. returnables.

Cases of non-returnables are conveyed from warehouse to a Meyer 2-head unloader that feeds a 20-wide soaker. Washed bottles travel over a platform chain conveyor to a 40-spout Meyer filler and crowner, operating at 240 bpm.

Bottles continue through a Liquid Carbonic pasteurizer and to four World Tandem labelers that apply body and neck labels. A semi-automatic packer then loads 24 bottles or four 6 packs to a case. Cases finally proceed to a unit loader that assembles 48 cases to a load.

The 12-oz. returnables are conveyed to the basement and a Standard-Knapp 2-flap case opener. Latest 5-head Yundt case unloader next feeds empties to a 40-wide (500 bpm.) Barry-Wehmiller soaker.

Washed bottles move to two 60-spout, 250 bpm. Cemco fillers and crowners.

Filled bottles are conveyed in two lines to a Barry-Wehmiller double-deck pasteurizer then to four World Tandem labelers that apply shoulder, body and wrap-around labels. Semi-automatic case packers load 24 bottles into a case, which then continue to a unit loader.

On still another line, 12-oz. returnables are filled at a 240-per-min. rate. A 2-head Meyer unloader feeds empties to a 24-wide Yundt soaker. Bottles are then conveyed through a 50-spout Cemco filler and crowner, single-deck pasteurizer, four World labelers and semi-automatic case packer. Cases of 24 bottles are unit-loaded into stacks of 42 cases.

Speed on the 8-oz. returnable line is also 240 bpm. A 2-head Meyer unloader feeds a 20-wide soaker. From here, bottles go to a 40-spout Meyer filler and crowner, single-deck pasteurizer, four labelers, and semi-automatic case packer. Unit loader then builds up 28-case or 42-case loads.

Quart line operates at a rate of 80 bpm.

## Caustic Recovery System

Another money saving advance is the new system that enables previously wasted bottle washing compounds to be reclaimed.

In the system, soakers are emptied each evening into a 3,600-gal., basement-located tank. Then the caustic solution is pumped through a vibrating separator (Sweco) to remove labels and pieces of glass, then it goes to one of two 3,600-gal. make-up tanks.

Here, fresh caustic solution (received in 8,000 gal. tank cars and stored in two 10,000-gal. tanks) is introduced to bring the solution up to proper concentration. Caustic is then returned to soakers. —*End*

**MOUTH-WATERING** designs—showing butter melting on baked potatoes, toast, and pancakes—are spiraling sales upwards. Sunshine State and North Star control added costs of pictorial cartons by using stock vignettes.

**ICE CREAM,** too, benefits from attractive in-use illustrations. Keystone Farms boosted sales 10% in '57 with this carton.

# Switch to Pictorial Packages

**Illustrated cartons boost butter volume 5 to 43%, reverse consumption downtrend.**

IS YOUR package a wallflower on store shelves while its more attractively designed competitor is picked up by the shopper? If so, it may be that you're not showing your product's appetizing in-meal-use to good advantage.

Poorly designed packages are the surest way to static sales. Such packages make the shopper feel you aren't enthusiastic about your product, and that dims her interest in it.

For a good tip on how effective package design can up your sales, take a look at what dairy companies —especially the butter makers—are doing. They're swinging more and more to pictorial cartons to lure shoppers. Result: spectacular sales increases.

Butter makers face a unique packaging problem because their product is not valued so much for itself as for what it does to enhance the taste of other foods.

To capitalize on this, butter packages are minimizing printed messages and letting product photos or realistic drawings do the selling. As Harvey H. Robbins, executive secretary of the Paraffined Carton Research Council points out, the best way to display a product is to show it in action.

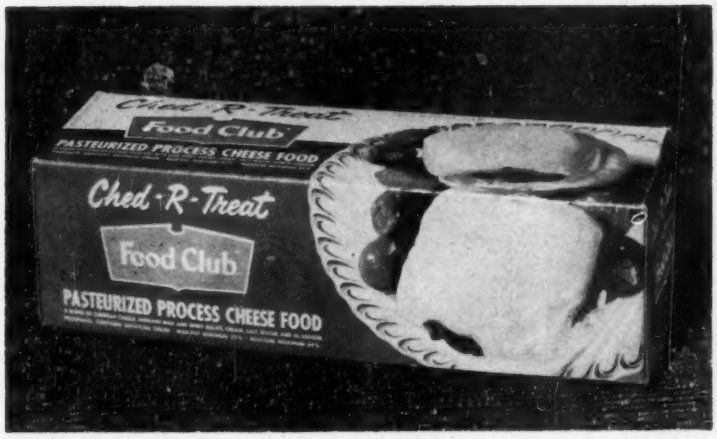
Robbins cites recent trends in the dairy industry, where creameries are switching to pictorial representations of butter uses. Conventional designs showing pats of butter or ½-lb. sticks, which lack appetite appeal, are being dropped. Replacing them are illustrations of butter pats melting on toast, waffles, steaks, baked potatoes, and even in soups.

**These cartons spark sales by making shoppers hungry for the complete dish. By stressing the finished product—hot, crispy buttered waffles, for example—these pictorials have an impact that creates a personal relationship between shopper and shelf-displayed package. And the illustrations make the package come to life at point-of-purchase.**

## Can Keep Costs Down

When the shopper walks down the supermarket aisle, the package's pictorial appeal reaches out persuasively. The consumer gets a stronger idea of what the product can do for

**JOHN V. ZIEMBA**
Associate Editor, "Food Engineering"




**SALES QUADRUPLED** within year after Topco Associates redesigned its 2-lb. processed cheese carton, featuring colored photograph of succulent cheeseburger. Old carton had line drawing of dairy farm.

# Sets Off Sales Boom

## Design highlights product's in-meal uses

her meals—and she picks up the package.

Of course, illustrated cartons are more costly than non-illustrated ones. But even small producers, anxious to build greater sales, have found them worth the additional expense. By taking advantage of the wide selection of stock designs and food illustrations that are available, they have found ways to keep costs in line.

### Reversed Downtrend

The "product-in-use" illustration got its start in the butter industry about four years ago. And it has helped to turn the per capita butter consumption curve upward (8.7 lb. in '56 vs. 8.5 lb. in '53) as well as deflect the competitive forays made by margarine.

Tempting vignettes showing the product in actual use have also pushed up sales of ice cream and cheese products, manufacturers report.

One retail food store organization, for example, quadrupled sales within a year after redesigning a processed cheese carton. The old package had a familiar line drawing of a typical dairy farm. In contrast, the new carton is dressed up with a color photograph of a succulent looking cheeseburger.

Examples of how pictorial cartons have sent a company's butter sales zooming are easy to find. Here are a few:

### Ups Sales 43%

Over-all butter sales have increased about 43% within the past two years at Spink Country Dairies, Redfield, N. D. The firm's Vernon Sjoquist feels that business almost tripled at first when the company went over to pictorial cartons.

He says "A lot of this increase in demand comes from the prestige given our brand name through use of appealing pictorial cartons. The picture design also adds desire and appetite appeal to the product.

"And our display in the dairy case does not have to take a back seat to competitive packages.

"Anyone who passes up the pictorial butter carton and sticks to an old established design is missing the boat.

"We're also using this carton for ice cream—and with success".

### A 35% Sales Gain

Sales are up over 35% since Swisher Creamery, Inc., Tulia, Tex., first began packing butter in pictorial cartons. And this took place without any special effort to expand.

Here's what Swisher's Henry Teubel has to say: "We switched to these cartons because of good reports from people who had used them, and because our sales in the old-style carton were dropping to a point where we considered giving up the idea of putting butter in cartons.

"Since going to pictorial cartons, there's been new life in our butter sales. And we continue to feel the impetus of the sales appeal carried by them.

"Their value is best illustrated by one of our distributors who insisted on having his butter put up by us under his own label—one of conventional design and yet above average in sales appeal. He tried for over a year to establish his own brand and carton through radio and TV commercials in a city of 150,000.

Cleanliness, corrosion-resistance and long service life make this Wissco Stainless Steel Belt a natural choice for Kraft's cheese cooling operations.

# FAMOUS NAMES
## *ride on* WISSCO BELTS
## *Kraft Foods Ltd. • Montreal*

*The story of Wissco Belts is best told by their users.* For instance, Mr. Paul Katien, Vice President in Charge of Production, Kraft Foods Ltd., Montreal, says:

**"In the three years that we have been using our stainless steel Wissco Belt, we have realized a production increase of about 300,000 jars of cheese per year and attendant savings of about $14,800 in belt costs."**

The belt is used to transport jars of hot cheese through a cold water cooling tunnel, a 20-minute trip. It runs continuously eight hours a day, five days a week, and is under a constant stream of cold water.

"We have been able to maintain our cooling production quota of 125 jars a minute since the Wissco Stainless Steel Belt was installed," Mr. Katien continues. "Formerly, we used galvanized belts, but they rusted away under the steady water treatment, making it necessary for us to install two new belts per year. The Wissco Belt has given us three consecutive years of completely trouble-free service to date . . . at a savings of $14,800 so far.

"Downtime on galvanized belt replacement and repairs was costing us an estimated annual production loss of 330,000 jars plus about $1,000 in wages paid for periods during which no work was being done. Our Wissco Belt eliminated all of this and still shows not even the slightest trace of rust, corrosion or dirt which developed in galvanized belts. We can't even specualte as to when we will be replacing this belt . . . but when we do, it will certainly be with another Wissco."

Increased production . . . uninterrupted service over long periods under adverse conditions . . . economy in wages saved and in replacement costs. Strong arguments in favor of using Wissco Belts in any processing or conveying operation. Let us prove what they'll do for you.

5430

**WISSCO BELTS**
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

CF&I

THE COLORADO FUEL AND IRON CORPORATION • Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION • Atlanta • Boston • Buffalo • Chicago • Detroit
New Orleans • New York • Philadelphia • CF&I OFFICES IN CANADA: Montreal • Toronto

**PICTORIAL CARTONS** emphasize in meal uses of butter, enhance product's appetite appeal. Because butter can be used in variety of ways to improve flavor of other foods it lends itself to this type of package illustration.

"He dropped the idea, and asked us to furnish our own pictorial cartons for his sales outlet. His sales have shown a nice increase, and promise to do even better since our cartons have been introduced into his territory".

## Quick 26% Jump

North Star Creamery Co., Kenyon, Minn., went over to pictorial cartons in Jan. '55, and immediately sales jumped almost 13%. A month later, they increased another 9%. And after a 3-month period, 4% more, for a total sales climb of 26%.

Says North Star's E. C. Christensen: "This increase definitely couldn't have come about through a change in the quality of the product, because it was labeled 'Minnesota grade AA' both before and after the unveiling of our new carton".

## Nine More Successes

Albert Lea Co-operative Creamery Assn's. general manager, B. A. Augustine, reported a 6-months' sales rise of 8.67% after a switch to pictorial cartons. And sales have kept climbing since.

Augustine says: "In spite of cut prices by competitive brands, our butter enjoys repeat sales because the customer identifies product quality with the new carton.

"Shouting and boasting about a product as good and glamorous as butter, and then hiding it in a drab package, was foolish on the part of the industry. But the awakening came with the introduction of the pictorial carton".

An 18-20% rise in sales is reported by Lisbon Creamery Co., Lisbon, N. D., since it began using these cartons—about 5 years ago.

Increases of 20% in butter sales are also cited by Crystal Cream & Butter Co., Sacramento, Calif., and Grafton Milk Co., Grafton, N. D. A sales increase of about 15% was announced by Wisconsin Co-operative Creamery Assn., Union Center, Wis., which consists of 17 member creameries who produce an aggregate 14½ million pounds of butter annually.

Despite a price differential—about 5c. per lb. higher than that of a competitor—Santa Maria Dairy Products, Baton Rouge, La., increased sales 10% last year. Company was forced into pictorial cartons because of the good job competitors in the oleo business were doing with them.

Sales boosts of 5% were also experienced by Lawton Brothers Dairy, Dixon, Ill., and Pipestone Farmers' Creamery, Pipestone, Minn., after they switched to pictorial cartons. Colvert Dairy Co., Ardmore, Okla., jumped sales 14.5% within two months after a package change-over.

## Cheese, Ice Cream, Too

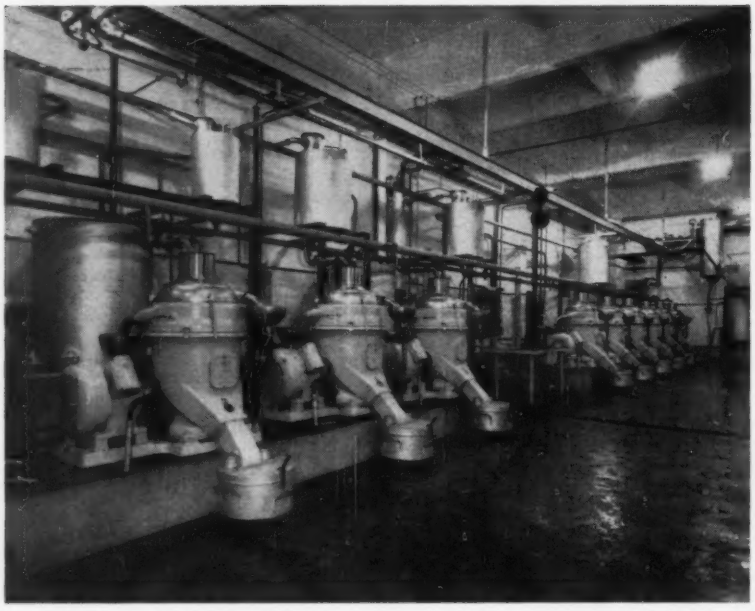
Creameries aren't the only ones hopping on the pictorial gravy train. Cheese and ice cream makers also report mounting sales as a result of switching to package illustrations that show how their product will appear when used at the table.

Same sales uptrend has been noted in connection with pictorial bread overwraps. And frozen food packers are bidding for more volume with color-illustrated rigid foil and plastic cartons as well as carton overwraps.

Signs indicate that this trend will continue to grow. Package designers and packaging material suppliers are developing improved mouth-watering and eye-appealing illustrations, which will further influence consumer buying habits.

*FE acknowledges assistance in the preparation of this report from Paraffined Carton Research Council and Daniel J. Edelman & Associates, Chicago.*

**"There's one we can use! Hope you got it all down, Miss Jensen!"**



IN ONE PASS these Titan Superjectors separate animal fats, wash water, and solids.

# Does sludge slow down your liquid-solid separations?

## *Look then to Pfaudler and the Titan Superjector*

This unique new centrifuge can handle slurries up to 35% solids by volume for a full month without need for cleanout.

All sludge is discharged periodically and automatically through a series of hydrostatically controlled slots.

The Titan Superjector concentrates solids up to 40% by volume, clarifies liquids down to 0.00% solids, and can discharge mixed solids particles up to 1/8" diameter with specific gravities up to 1.60.

Such performance makes it ideal for separating fats and oils, fruit juices, hot wort, dairy products, grains, and for wash water treatment.

Power consumption, by the way, is 50% less than with conventional units since there is no braking effect from the continuous discharge of solids.

Check the coupon for more information on the Titan Superjector and other integrated process equipment from Pfaudler.

**THE PFAUDLER CO., a division of PFAUDLER PERMUTIT INC.**
**Dept. FE-18, Rochester 3, N.Y.**

Please send bulletins on the ☐ Titan Superjector and this other Pfaudler Food Processing Equipment: ☐ Heat Exchangers ☐ Tanks—Mixing and Storage ☐ Conical Dryer-Blenders ☐ Fillers—Rotary Piston Type ☐ Evaporators—Film Type

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

**THESE MEN** are inspecting fresh grapes shipped in new wood-reinforced corrugated container.

# New Lug Cuts Shipping Cost

**Makes long-haul grape shipments more economical. Avoids in-transit shattering or bruising of product.**

SHIPPING COSTS may be cut $100 or more per railroad car by a new corrugated container for fresh grapes. This "lug" box is 10¢ cheaper than wooden containers, and it assures good product protection.

Result of five years of research by Container Corp. of America, it is designed to provide more economical shipping over long-distance hauls. And two test runs from California to Chicago and New York auction markets showed that corrugated lugs will do the job as well as, or better than wooden ones.

**Among the lug's demonstrated advantages are:**

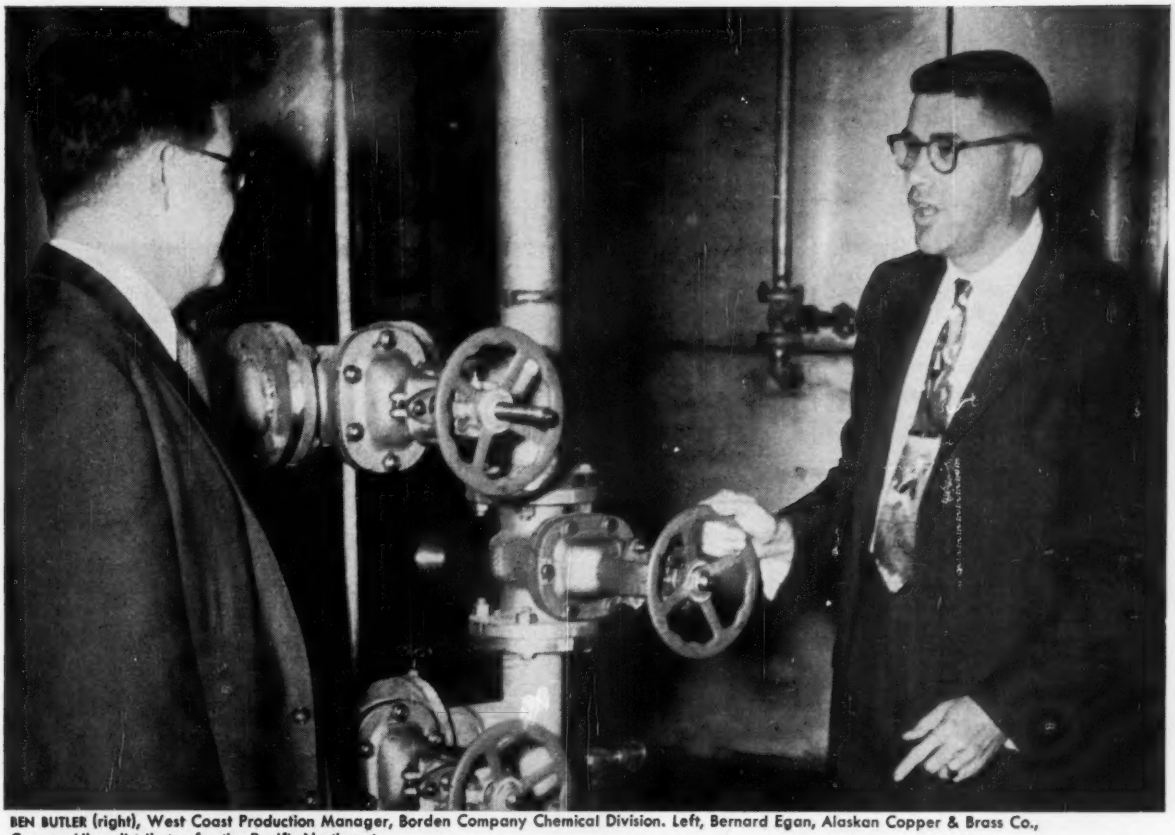
**1. Prevention of in-transit shattering of fruit.**

**2. Elimination of need for top and bottom pads and side guards (used in wooden containers to prevent bruising of fruit).**

**3. Bunch-packing of grapes in the field (thus speeding up packaging operations).**

**4. Easy opening for inspection and display purposes.**

Constructed of specially treated moisture-resistant board, the lug is a 28-lb. net die-cut wood and fiber container. End walls are reinforced with wooden frames for structural strength, and top flaps are scored to provide the crown that grape buyers prefer. Stained wood cover cleats assure adequate ventilation. —*End*



BEN BUTLER (right), West Coast Production Manager, Borden Company Chemical Division. Left, Bernard Egan, Alaskan Copper & Brass Co., Cooper Alloy distributor for the Pacific Northwest.

# BUTLER OF BORDEN CHEMICAL

## *tells why he buys COOPER ALLOY stainless steel valves*

*Q. Mr. Butler, why does Borden Company Chemical Division require stainless steel valves?*

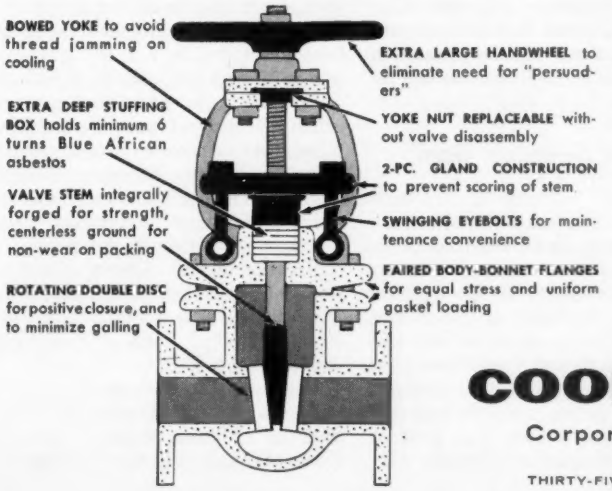
A. In the manufacture of formaldehyde, its derivative resins, and corresponding industrial adhesives only stainless steel can meet our rigid requirements for corrosion, contamination and heat resistance.

*Q. What do you consider the most important factor in purchasing valves?*

A. The truest measure of a valve is its operating performance. We have never received a complaint on Cooper Alloy valves from our engineers or operating personnel. The extra-large handwheel and unique valve design afford easy operation with positive opening and closing, minimizing maintenance and down time.

*Q. What other factors count in choice of valve supplier?*

A. Service. The large and complete Cooper Alloy stock at Alaskan Copper affords immediate delivery on stainless steel valves and fittings, as well as pipe. That's a big reason why we buy Cooper Alloy!


BOWED YOKE to avoid thread jamming on cooling
EXTRA DEEP STUFFING BOX holds minimum 6 turns Blue African asbestos
VALVE STEM integrally forged for strength, centerless ground for non-wear on packing
ROTATING DOUBLE DISC for positive closure, and to minimize galling
EXTRA LARGE HANDWHEEL to eliminate need for "persuaders"
YOKE NUT REPLACEABLE without valve disassembly
2-PC. GLAND CONSTRUCTION to prevent scoring of stem
SWINGING EYEBOLTS for maintenance convenience
FAIRED BODY-BONNET FLANGES for equal stress and uniform gasket loading

## A VALVE DESIGNED FOR STAINLESS!

The Cooper Alloy valve is not an adaptation of earlier brass and iron patterns. Cooper Alloy, with over 35 years of experience in handling stainless steel, created a valve *designed to be cast in stainless!* **Check the Special Design Features shown at left.**

As the little CA man below is saying: *"You can tell a Cooper Alloy Valve as far as you can see it!"* Write today for *your* copy of our folder "Design Factors In Stainless Steel Valves." The Cooper Alloy distributor near you will be glad to show you the complete line of Cooper Alloy valves *and fittings*, and their advantages. He can serve you promptly from local stocks.

**COOPER ALLOY**

Corporation • Hillside, New Jersey

*VALVE & FITTING DIVISION*

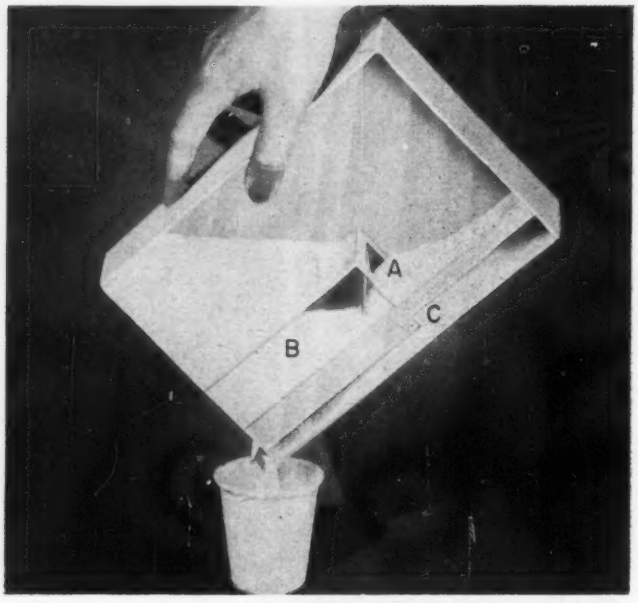
THIRTY-FIVE YEARS OF STAINLESS STEEL PIONEERING



For more data, circle this page number on card at back →

# Self-Measuring Carton:

**Search for ultimate in less-work containers is intensified . . . Now comes box with built-in device for measuring pours—pointing way to many possible food applications**




**HERE'S HOW** metering carton works. Cross-section shows product flowing by gravity through valve (A) into loading chamber (B) while box is tilted. When carton is upright, contents drop through slot into discharge chute (C).

CONVENIENCE-TYPE packages that ease and speed preparations in the kitchen have boomed sales for alert manufacturers. Latest offered is the metering carton that does the measuring job for milady.

Self-measuring cartons that dispense only a pre-fixed amount have long intrigued food companies. By eliminating product waste and the need for measuring utensils, the package appeals to convenience-conscious housewives, offers a definite merchandising advantage.

The recent debut of a detergent in a package that pours a pre-set amount suggests that the self-measuring container has advanced beyond the drawing board stage and moved closer to commercial use.

Several food companies, alert to the package's possibilities, are reviewing their product lines to see where the container may fit in. And at least one supplier, Container Corp. of America, is pushing work on such a package, hopes to have it out soon.

Indications are that powdered milk, instant chocolate, and a breakfast cereal may be among the first food products appearing in a self-measuring package. Two large dairy products firms are researching the container for powdered milk.

Product density is one of the kinks that needs ironing out before the container can be used for powdered milk. Because density may vary from batch to batch, trick is to dispense an amount which will provide the same quantity of reconstituted milk each application.

As for breakfast cereals, the inner wax wrap interferes with the functioning of a meter that is built into the carton. One possible solution is to employ a protective overwrap instead.

## Consumer Reaction Good

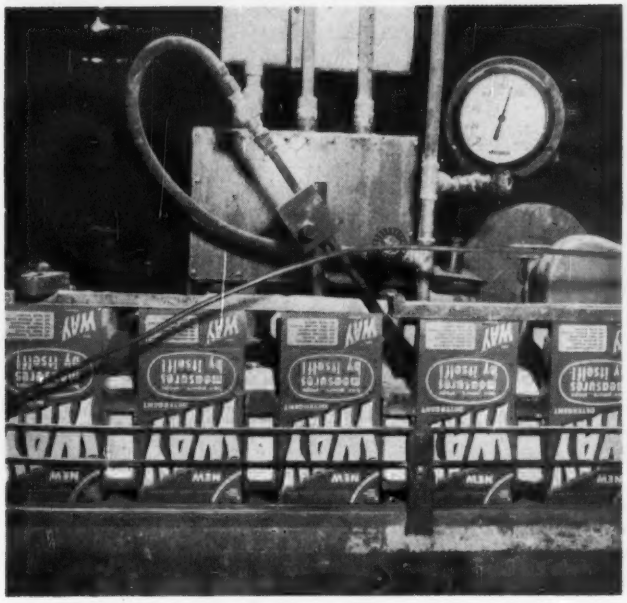
Consumer reaction to the self-measuring detergent package indicates a strong desire for food products to be put up in this type box. U. S. Meter Container Corp., New York City, developer of the carton, recently polled housewives who had purchased and used the metered box.

When asked what other products they'd like to see in a self-measuring container, the women put food at the head of the list. Cereals, rice, and chocolate drinks, in that order, were mentioned most frequently.

Successful metering cartons have been developed for rice and granular dog food, says Stan Silver, president of USMC. He adds that several other food products can be put up in self-measuring cartons. Among them: Cocoa, coffee, dessert mixes, granular food supplements, hot cereals, instant dry milk, instant food mixes, rice, beverage powders, salt, and sugar.

Because of the meter's construction, the product must be a dry, free-flowing solid. Powdery products that cake or 'bridge', such as flour and oatmeal, are out.

Silver says the package is ideal for products that may be wastefully handled by children, such as instant chocolate. He adds that putting up



**METERING VALVE** is blown into place by air-jet attachment (85 lb. pressure) just prior to loading. A mechanical plunger has now been introduced for use with high speed filling lines.

# Adds Convenience

single-serving items in bulk form in a metering carton would help reduce packaging costs.

## How Does the Carton Work?

The self-measuring package is made from a one-piece box blank. The metering device, an integral die-cut and scored section, extends beyond the blank's glue-seam side.

Completely formed, the carton's metering section includes: (1) A hinged valve, (2) a loading chamber, and (3) a discharge chute (see photo p. 80).

When the carton is tilted downward, product contents flow through the valve into the loading chamber in a measured amount. When the package is turned upright, the valve falls back into place and the contents in the chamber drop through a slot into the discharge chute.

To pour, the consumer then merely tilts the box. Product flow stops automatically after the predetermined quantity is dispensed. For multiple pours, the consumer waits two or three seconds for the meter to reload.

Silver says the carton can be filled on conventional packaging machinery. Only additional equipment needed is an air-jet attachment to blow the valve into place prior to loading.

The detergent package is being handled on a Stokes & Smith Never-stop carton filling and sealing machine.

To make carton-filling more feasible for the high speed runs necessary for large-volume food products, Stokes & Smith has developed an improved version of the air-jet attachment. It's a mechanical plunger which can be linked to the speed of the filling machine, will process as many as 300 cartons per minute. Estimated cost: Around $1,000.

Fewer cartons are accommodated on feeding racks because, knocked down, the meter makes the box about one ply thicker than the standard one. Loading capacity is reduced about 20%.

## No Change in Carton Size

Existing packages whose contents are subject to settling can utilize the meter without changes in size or capacity, Silver says. He adds that cubic volume displaced by the meter is negligible.

Self-measuring cartons can be designed to dispense anywhere from a teaspoonful to a cupful. However, Silver cautions that number of portions to be dispensed must be at least 10 and not more than 30.

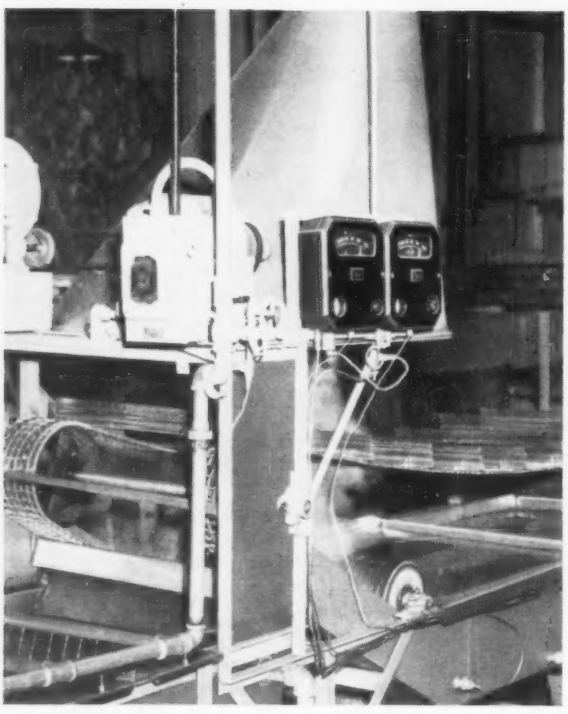
To stimulate usage in the food industry, Silver is offering exclusive rights on a limited basis. A manufacturer who takes out a license will have exclusive use for his type of product for two years.

Cost of the metered carton is 15 to 20% higher than for the standard one, he says. In addition, there is a 5% royalty on packaging materials cost the manufacturer pays to USMC.

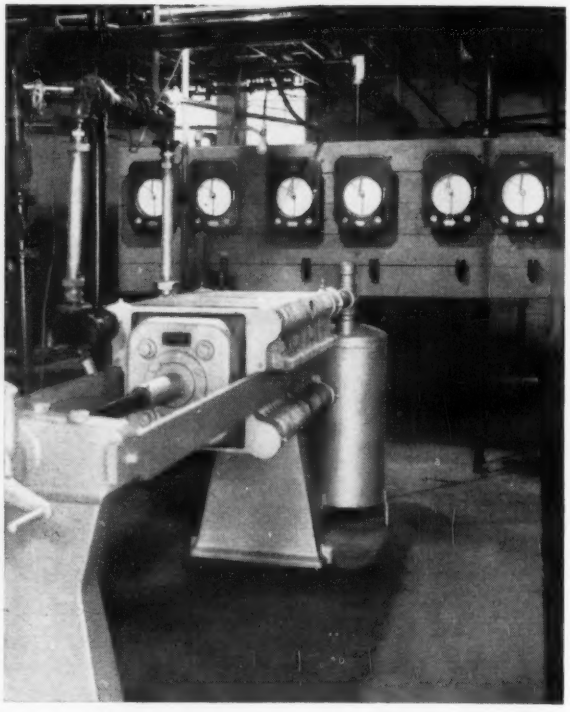
Higher outlay comes to between ½ and ¼¢ a package, Silver estimates. Although manufacturers shy away from anything that raises package prices in today's competitive market, Silver insists that the carton's merchandising advantage will offset the higher unit price.

In support of this, he says that recent surveys—done for his firm, as well as two independent ones, by household-products manufacturers—all came up with the same result: Women voted for the meter carton better than 2 to 1.

A test by Container Laboratories with the detergent package showed average accuracy of the metered portions was 95.8%.



**BLANCHING . . .** On the apple slice blancher shown above (one of three . . . all under Taylor Controls), the two Taylor indicating FULSCOPE* Temperature Controllers operate Taylor HI-FLOW* valves which regulate steam input. Maintaining exact temperature is extremely important in the blanching operation to prevent discoloration and to maintain perfect texture. The company is well pleased with the performance of this Taylor designed system.

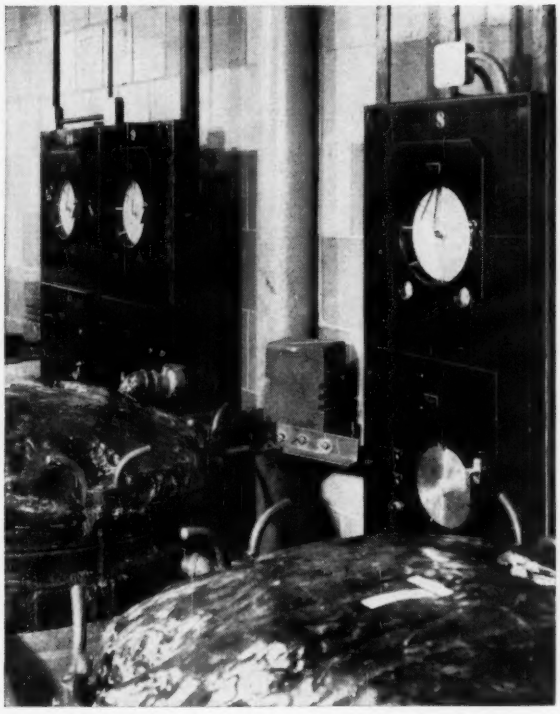


**JUICE HEATING . . .** Water Type Juice Heater Control System controls and records temperature of juice from exchanger to filler with control valve in raw-juice by-pass. Records temperature of juice holding tubes and raw juice entering heater. Controls circulating water temperature. Gives uniformly high quality, saves steam, eliminates manual operation and cuts "burn-on". Taylor controls on your processing equipment are your best assurance of uniformly high quality products.

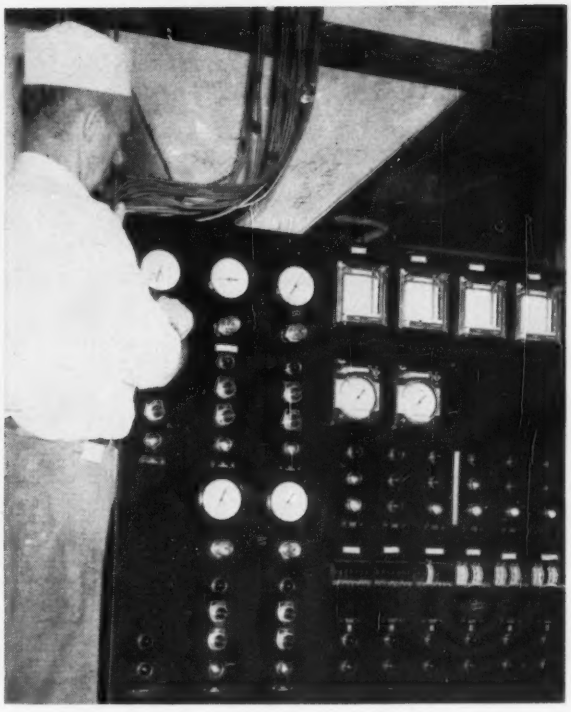
# TAYLOR CANNING CONTROLS

There's a Taylor Control System for every kind of food processing operation, from the most exacting grading or blanching operations, to the most complete continuous process control. These Taylor Control Systems mean real profits to the food processor, because they help him to: 1. Keep product quality high;
2. Prevent loss through wasted steam or inefficient operation;
3. Avoid costly shutdowns. Ask your Taylor Field Engineer, or write Taylor Instrument Companies, Rochester, N. Y., or Toronto, Ontario.

*Trade-Mark



**RETORTING . . .** The new Taylor SPW-7AV Retort System gives completely automatic, completely flexible control for steam or water cooking of any commercial type glass or tin container, with or without pressure cooling. It controls temperature during the pre-heat period; operates agitation air for come-up, cook and cooling periods; controls steam, air and overflow; times cook period; shuts off steam valve, introduces cooling water and maintains pressure on retort; shuts off water and air; resets for next cycle.



**COMPLETE PROCESSING . . .** In this completely automatic canning control system, Taylor instruments control blanching, grading, pre-heating, cooking and cooling. This is done by locally mounted instruments and recorded on a central control panel on the main floor. The panel also shows level in hoppers and speed of closing machine. An operator at the central panel can observe the complete process and make any required corrections at any time.

# PAY REAL DIVIDENDS !

See you at the Canner's Show

**14 FRUIT AVENUE**

*Taylor Instruments*

*MEAN*

*ACCURACY FIRST*

VISION · INGENUITY · DEPENDABILITY



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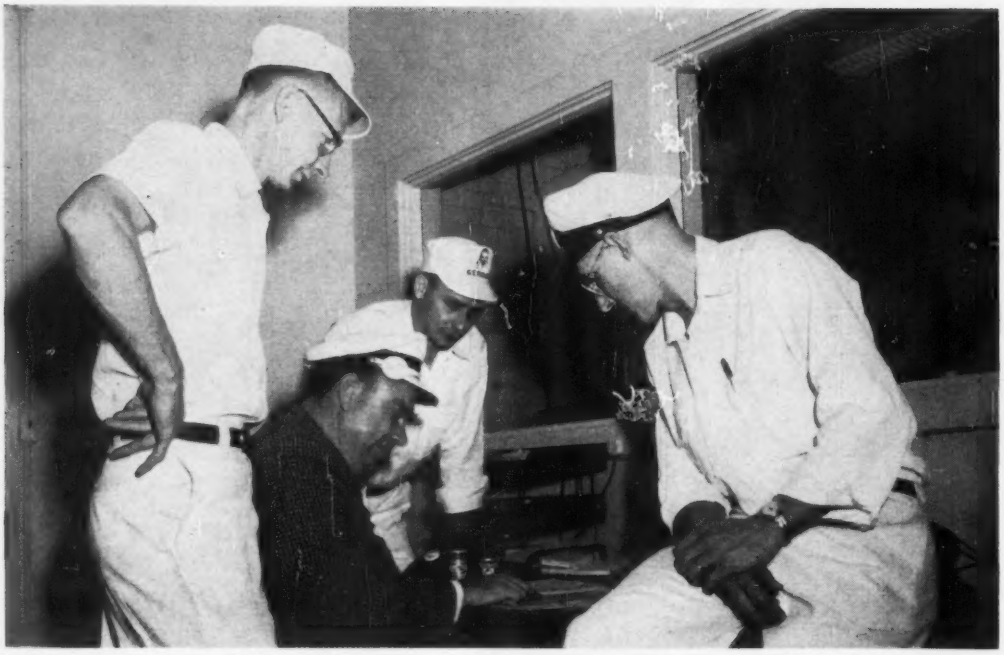


THESE Gerber sanitarians have proved to top management that production alone doesn't hold the only key to attaining effective cost savings.

# Topnotch Sanitation Program

**Gerber takes attitude that there's always room for improvement. So it has adopted workable, flexible, sanitation program that's an integral part of production.**

KEEP OUR PLANTS the cleanest in the world!

That, in a nutshell, is the sanitation order at Gerber's. And the order is backed up with full support from topside.

We think we're doing a good job of it. Plant visitors agree. They are impressed. And our people are happy about working in a spotless plant.

But we know we can't rest on our oars. New products that require substantial changes in equipment are coming up all the time. These introduce new sanitation problems. To solve them, we must keep on our toes, to find the easiest-to-clean equipment, the best sanitizing materials, and most effective clean-up techniques.

Moreover, we are constantly challenged to find new and better ways to lower sanitation costs. Our department always takes the attitude there ought to be—must be—cheaper ways to keep our plants clean.

At Gerber's, sanitation is under the dual top-level control of plant manager and director of quality control.

The sanitation section is a part of the quality-control department. Personnel consists of a supervisor, microbiologist, microanalyst, and bacteriological technician.

Clean-up foreman is directly responsible to the plant superintendent. However, sanitation has authority to tie up equipment likely to contaminate products, or areas not properly cleaned.

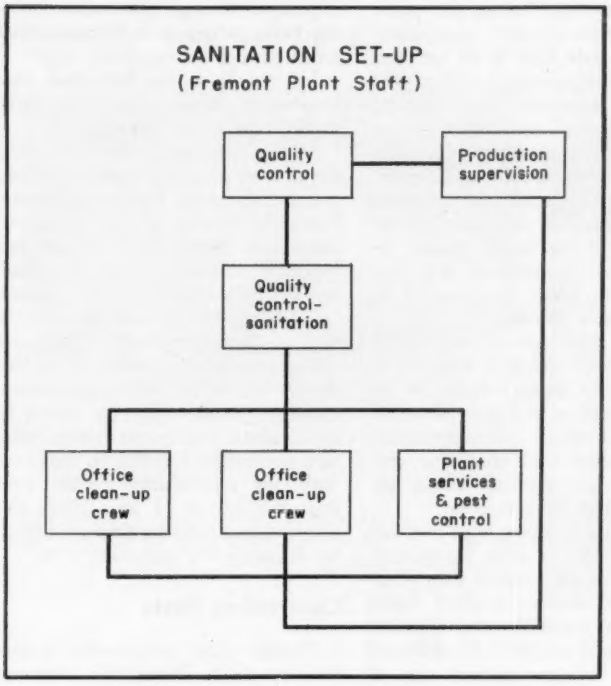
Plant superintendent also supervises the service department assigned to insect and rodent control. It's made up of a foreman and two assistants operating during the 1st shift and week-ends.

But there's no lack of cooperation between the sanitation supervisor and all department foremen.

Key man in the sanitation program, of course, is this supervisor. His responsibilities are to:

1. Prepare and maintain adequate clean-up procedures that include, in specific detail, cleaning equipment to be used, and sanitizing agents to be employed.
2. Set up a program for control of insects, rodents, and other pests.
3. Supervise, from a sanitation standpoint, sewerage, sewage disposal, and water supply.

**PAT McGOWAN and HAL DELO**
Quality Control Department, Gerber Food Products, Fremont, Mich.




# Cuts Cleanup Costs

4. Look into sanitation and health problems in company cafeteria.

5. Check maintenance and adequacy of sanitation practices in rest and dressing rooms.

6. Oversee general housekeeping practices in plant and on premises.

7. Instruct warehouses in best sanitary methods for storing raw materials and finished goods.

8. Supervise lighting, heating and ventilation facilities from a sanitation standpoint.

9. Keep abreast of scientific literature and technical developments.

A natural follow-up of the supervisor's responsibilities are control steps. Look, for instance, how the sanitation section goes over production lines with a fine-tooth comb:

It has lines flushed after clean-up operations to run bacteriological counts on wash water. It carries out bacterial-swab tests on key spots along the lines. It pulls samples off lines to run bacteriological checks. And it continuously inspects lines and adjacent areas for cleanliness.

Clean-up foreman, along with his two assistants, supervises and inspects daily clean-ups. But inspections don't end here. They're also carried out by department foremen, the sanitation supervisor, and as many as 36 technologists in the quality-control department. Unsanitary conditions are immediately corrected, and the sanitation supervisor is advised. He then makes a follow-up inspection.

We also employ an outside sanitation consultant (James Laboratories) to check our program twice a year and suggest new ideas. This consultant reports directly to the president and director of research.

However, most significant control measures are the written clean-up procedures for each equipment item. A lot of work and study go into setting these up. Here, for example, are the ones worked out for two pieces of equipment—hammermills and finishers:

Hammermills are water-flushed whenever possible. Tanks ahead of them are charged with a solution containing 8 lb. Diversol (chlorinated polyphosphate), or Wyandotte's Salute (a silicated dish-washing machine compound). Solution (170F.) is recirculated through tank and mill for an hour, and then discharged to floor drains. Rinse water is next recirculated through both units. Should scales or stains persist, units are brushed clean with a 1 to 4 solution of Dilac (Diversey's milk stone remover), which is heated to 140F. Finally, the equipment is cold-water rinsed.

**Finishing and holding tanks** are cleaned-in-place daily by a cold-water rinse. Permanent pipes are installed so they can be connected for recirculation of a 150F. solution containing 8 lb. Diversol in 500 gal. of water for one hour—and under maximum pressure. System is flushed, and rinsed with warm and then cold water. At intervals, this compound is replaced with a 10% Dilac solution, and followed with the same circulation procedure.

## Operators Clean Spillage

We've also set up a clean-as-you-can program. Our thinking is that it's easier for personnel to produce a high quality product under cleaner, more satisfactory working conditions. With this in view, we've instructed machine operators to eliminate build-up of spilled products by keeping equipment clean at all times. They get to doing their on-the-spot clean-up chores subconsciously.

Cost of cleaning the plant and equipment amounts to $0.01 per case of finished goods. And it's up to the production superintendent and sanitation supervisor to keep within this figure.

They receive cost-per-case figures each week from the payroll department. Both go over them and, if there are any that are out of line, they talk it over with the clean-up foreman. The foreman then carefully plans his next week's schedule by reducing costs of labor, or materials. Or he can change work assignments (such as not cleaning unused machines).

These cost figures keep sanitation supervisor and clean-up foreman in close cooperation, deciding where experienced clean-up men can be used to best advantage. The right man is assigned to clean equipment with which he's thoroughly familiar. With

these figures, the plant superintendent can also check on any clean-up costs that are out of line and call for explaining. He can, for instance, control use of cleaning agents, such as employment of 10 lb. detergent to clean a line that can normally be done with 5 lb.

Sanitation improvements that cost less than $500 are worked out between foreman and sanitation supervisor. But more expensive ones—such as $2,000 to knock out a wall and put in a new one—must be approved by the plant manager or superintendent. It's then the duty of the sanitation supervisor to follow through to completion of the job.

## Continual Education Needed

Yes, sanitation involves police action. But it's also the duty of the sanitation supervisor to sell department foremen and other personnel on its importance. They're instructed on the need of a workable program that doesn't cost too much and will curb contamination.

Actually we've put our department foremen in a frame of mind where they feel they can do a better job than the so-called sanitation experts. So they make a lot of housekeeping improvements on their own. They want to beat these experts "to the punch."

We have a method that we feel has laid the groundwork for making our department foremen conscious of sanitation. It's to start them off as clean-up foremen.

Noteworthy, too, is a job-rating system for the clean-up crew. The union contract is set up to give it an extra pay differential for working the 3rd shift. Jobs fall into four classifications—rated, back-up, utility, and probationary (50 days) help—in accordance with seniority.

We also feel that it is necessary to sell the clean-up crew on the importance of its jobs. So four or five times a year, we assemble it for 1 to 1½ hr. to explain sanitation procedures, importance of bacteriological control, etc. Supplies of sanitizing agents are sometimes invited to talk about their products and how best to use them. Meat inspectors are even called upon to explain their jobs and what they're trying to do. The last 15 or 20 min. of the meeting are devoted to questions and answers.

The sanitation department spurs clean-up and other housekeeping improvements by correlating research and development information to be put into practical use in the plant.

An example is new equipment. Sanitation goes over it to see if it can be easily cleaned. Then the sanitation supervisor and clean-up foreman "bump" heads to work out a tentative clean-up procedure. They explain it to the crew, and supervise the cleaning. Maybe the procedure must be amended, or a new one set up. After it has been applied for 1 to 2 weeks, a standard procedure is drawn up and incorporated in the sanitation manual.

Once a standard is established, it is approved by the director of research. He issues copies to all plants. These plants may, if necessary, modify them (with approval). Or they may find that the procedures are not practical. Then, special ones must be worked out.

But setting up procedures does not apply entirely to new equipment. New cleaning compounds may be involved. Or a new product being processed in presently used digesters might deposit a residue far different from that by the normal run of products. If this is so, new cleaning compounds and procedures must be devised.

Sanitation also cooperates with various manufacturers on new sanitizing agents and methods of application. Samples are submitted to our labs, along with detailed information, and then test-tried under actual plant clean-up conditions.

We work with manufacturers of process machinery. Sometimes, we come up with suggestions on building better sanitary features into their machines. Or, after we've purchased a new machine, we may modify it to make it easier to clean or more sanitary to operate.

## Cleaned-in-Place Techniques

Significant in one of our cost-cutting sanitation chores is the system we've devised for cleaning pipelines in place. Formerly, it took three men 8 hr. to clean about 180 ft. of pipes between finishers and holding tanks ahead of filling machines. Pipes had to be dismantled, segment by segment, cleaned with a brushing machine and then reassembled.

Now one man does it in a little over an hour—and with little effort. He takes care of ten finishing and four holding tanks as well as the pipelines and pumps. Lines are easily set up for recirculation of cleaning solution prepared and heated in finishing tanks. Solution is pumped through pipelines to holding tanks, where it is by-passed and returned to finishing tanks.

Interesting is the fact that bacteriological checks show that we're doing a far better clean-up job.

We're even using the CIP technique on such equipment as dicers, mixers, Votators, hammermills, etc. Formerly it took a man 8 hr. to hand-clean the Robinson fruit and vegetable cutter. And he often needed help on this tedious chore.

Now we take about 15 min. to set up the equipment. Then we make up a cleaning solution in discharge tank below cutter, and pump-circulate it through 2-in. pipes to sprays above and below cutter. Solution flows out of cutter to discharge tank for recirculation. One man does the job in 2½ hr. While the solution is circulating through cutter, he cleans up the immediate area.

## Controlling Pests

Gerber makes pest control a continuous affair. Preventive measures take in the inspection of all incoming raw materials, inspections by sanitation supervisor and insect-control crew, elimination of breeding and harborage areas as well as residual food sources.

Insect stomach poisons or baits are forbidden in process and storage areas. Under limitations, contact and space spraying techniques are employed. Only combinations of pyrethrins with piperonyl-butoxide or allethrin in an odorless oil base are routinely used in processing and food container-storage areas. Where there is likelihood of oil damage to asphalt-tile floors, contact spraying with a pyrenone-pyrethrin water emulsion is followed. And, where necessary, fumigation is carried out.

Depending on the area, space spraying with portable or permanent fogging equipment is undertaken once or twice a week. Residual sprays are applied to outside yard areas. Fly-control measures (using spray techniques) are concentrated on office, waste-disposal and meat-preparation areas.

Permanent control measures employed for rodents are: (1) Eliminating residual foods around the plant; (2) Warfarin where there's indication of rodents outside the plant; (3) preventing rodent harborage in undeveloped property outside the plant; (4) screening or blocking all possible entrances to plant; and (5) storing goods at least 18 in. from walls. —*End*

**Pears that once went to dump . . .**

**. . . now go to market as drink**

**FORMERLY,** culls separated from marketable fruit in packing houses were piled in dumps (above) to decay. Now they're transported to an Oregon distillery and converted to vodka. Shown at right is first trailer load of beverage.

# Vodka From Pear Wastes

**Oregon distillery converts culls and cannery trimmings to popular beverage. Process is seen as solution to previous costly disposal problems**

PRODUCTION OF VODKA from cull pears and cannery waste is seen as a solution to Oregon pear growers' biggest headache—some 32,000 tons of the combined products now costing money for disposal.

The Hood River Distillers, Inc., Hood River, Ore., for years distillers of fruit brandies, recently decided to utilize its facilities and the abundant raw material for production of vodka.

Pear was chosen for several reasons. First, because of its abundance, and secondly, because it is low in flavor constituents which are comparatively easy to remove, thus yielding an exceptionally clean neutral spirit.

Cull pears are trucked to the distillery and dumped into receiving bins. From here they are belt-conveyed to a hammer mill and pulper, where they are crushed. (Pears differ from most other fruit in the tenacity with which the juice is retained, and no commercial equipment has been developed capable of separating it efficiently.) Pear waste is pulped at the cannery and delivered to the distillery by tank trucks.

The pulp is pumped into large fermenting tanks, where a champagne-type yeast starter is added. This culture was chosen for its ability to convert sugar into alcohol rapidly. The fermenting action is under way in a few hours. It continues to increase in violence, reaching a crest in 38 to 40 hr.

Temperature of tank is checked periodically in order to maintain a maximum of 85F. Yeast foods are added to assist in complete conversion of sugar to alcohol (winter pears contain 10% sugar, Bartletts 6%). Fermenting cycle is completed within 72 hr. The fermented must now contains approximately 4.5% alcohol by volume.

Material is then pumped to an agitator tank, where a sample is drawn to determine alcoholic content, and the volume measured for federal record. The distilling material is next pumped through a preheater of the double-jacket type to raise its temperature to 160F before entering the center section of the 4-ft. dia. x 5 story column still. Live steam is fed into the bottom of this still through a sparge line.

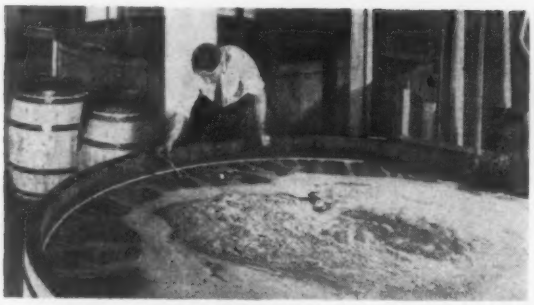
During first stage of distillation, the low proof product is diverted to a fusel oil decanter, which separates out the oil. Product is returned to the still, to continue upwards, increasing in proof as it rises. Spirits of 190 proof are drawn from the top plate and are transferred to the center section of a second still where the process is reversed.

The lighter congenerics, aldehydes, esters, and other acids, termed 'heads,' are forced to the top of the still and are withdrawn for destruction. The low congeneric spirits are transferred from the bottom through a cooler to the singlings tanks.

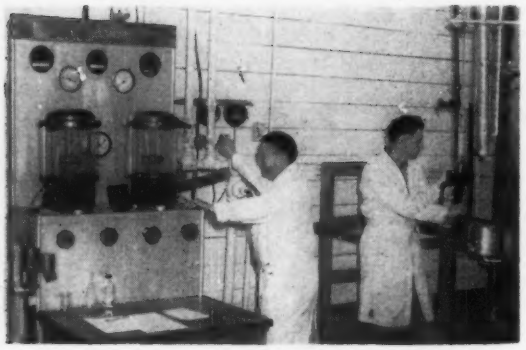
The spirits are reduced to 110 proof by the addition

**H. Y. YANG**
Department of Food & Dairy Technology,
Oregon State College, Corvallis.

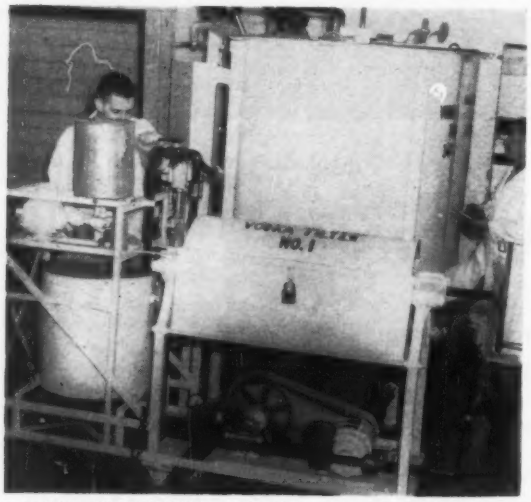
## Major pear-to-vodka steps



**1** FOLLOWING PULPING of culls and cannery trimmings, yeast is added to produce fermentation. Temperature is checked frequently to be sure it doesn't exceed 85F.



**2** COLUMN STILL (right) removes 190-proof spirits from fermented material. These go to stills (left) where "heads" are removed. Low congeneric spirits travel through cooler to singlings tanks.



**3** IN PROCESSING TANKS (rear) activated carbon is added to remove odor and flavor of pears. Then vodka is filtered to remove carbon.

of distilled water, and are pumped to glass-lined processing tanks. Here a specified amount of pharmaceutical-grade activated carbon is added. The tank is locked by the federal inspector and an agitator is turned on to run for a period of hours.

From the processing tanks vodka is pumped to a primary filter, where diatomaceous silica or filter aid is employed in the extraction of the carbon. After passing through this filter product is water clear, but continues through additional filtrations for purifications and high polish.

Following the filtrations, vodka is pumped to the internal revenue bonded warehouse, where it is gaged-in to glass lined storage tanks.

Before bottling, the vodka is again gaged and a tax ($10.50 per proof gal.) is paid. Then it is pumped to the bottling house reducing tank. Here the vodka is reduced with distilled water to 80 proof and is run through a final filtration for extreme polish. Then it goes into bottles for marketing.

Plant has a daily consumption of 40,000-50,000 gal. of pear wine, and an output of 2,000-3,000 proof gal. of vodka per 24 hr. —*End*

## Culls and Trimmings Have Posed Big Problem

Oregon's annual production of pears totals approximately 87,500 tons—50,000 tons of winter variety and 37,500 tons of Bartletts. Latter are mainly used for canning, while the winter varieties are packaged for the fresh markets.

Field run pears are inspected at the packing plants, where culls are taken out. These normally represent 20% of the crop, which means that Oregon has 13,125-17,500 tons of cull pears to dispose of annually. In many cases, they are hauled from the packing plant to a dump at considerable cost.

Problem that faces the canner is how to dispose of the pear waste—approximately 45% of the fruit. Aside from river pollution, transportation to and from the cannery costs money.

Many things can be made from the surplus fruit (winter pears contain 10% sugar, Bartletts 6%) and pear waste. Examples are: syrup base,[1] molasses and pomace suitable for livestock feeding,[2] and methane gas for use as a fuel.[3, 4] But none of the processes has ever been commercialized, for the problem is not technical, but economic. The solution would be a product with the highest possible market value, at the lowest cost.

Such a product—vodka—was produced recently. It is the first finished product made commercially from cull pears, and the first vodka made from fruit in this country.

Heretofore, virtually all vodkas, domestic or foreign, were distilled from grain. By definition, however, it can also be distilled from cane products or from fruit, provided it is treated to remove all the aroma and taste.

### References


1. Neubert, A. M., Graham, D. W., Olson, O. E., and Beardsley, C. L. "Refine Pear-Canning Waste for Use as Syrup Base". *Food Industries*, Vol. 22, p. 1545, 1950.
2. Brown, A. H., Ramage, W. D., and Owens, H. S. "Progress in Processing Pear Canning Waste." *Food Packer*, Vol. 3, No. 7, p. 30, 1950.
3. Harnick, G. W. *A. Preliminary Investigation on Methane Gas Production from Pear Waste.* Thesis for M. S. degree in Food Technology, Oregon State College, 1948.
4. Wilder, C. J. "Bacterial Fermentation of Pear Waste." *Proceedings, Fourth Annual Pacific Northwest Industrial Waste Conference*, Washington State College, 1952.

# Using Salt Efficiently

by **INTERNATIONAL SALT COMPANY, INC.**—America's largest producer of salt

## Sterling Purified Salt Always Protects Flavor, Color, Texture

Vegetable canners . . . bakers . . . butter, cheese and oleomargarine manufacturers . . . meat packers . . . fish packers . . . virtually the entire food-processing industry agrees: *Sterling Purified Salt is a superior product.* Experience on production lines everywhere has shown that Sterling Purified Salt always protects the flavor, color and texture of food. Thus, it is used "whenever salt of the highest quality is needed."

Sterling Purified Salt is guaranteed to contain more than 99.95% sodium chloride. There are never more than 40 parts per million combined calcium and magnesium, never more than 0.5 parts per million copper or iron. Downgrading of food—caused by excessive calcium or magnesium content in salt—is *eliminated.*

**Here's what food processors have to say** about this remarkable high-purity salt:

"We've been using Sterling Purified Canners Salt for years on our lines, because we like the way canned vegetables always retain their rich natural colors."

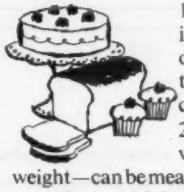
"We've licked the problem of oxidative rancidity in vegetable fats and oils caused by impurities in ordinary salt. We use only Sterling Purified Salt."

**A meat packer has this to say:** "We always use Sterling Purified Salt to protect meat flavors."

**A successful baker reports:** "Every loaf of bread and every cake we bake has just the right texture. One of the important reasons is that we always use Sterling Purified Bakers Salt to prepare the sponge."

These are typical of the comments food processors have for the quality of Sterling Purified Salt.

**Equally favorable** are the reports on Sterling Purified Salt's additional features. Because it's a *granulated* salt, it offers these distinct advantages:



1. It won't break up in shipping or handling—always maintains its uniform crystal size.
2. It has a constant volume for any given weight—can be measured with precision on either a weight or a volume basis.
3. It dissolves instantly and *uniformly*—in every type of salting operation.

You can use Sterling Purified Salt dry, or in brine form, with equal effectiveness. Many of today's food processors, however, find brine most convenient and economical, because it greatly simplifies salt handling and reduces salt consumption. To make high-quality brine automatically from Sterling Purified Salt, International has developed the Sterling Evaporated Salt Dissolver in many custom designs and sizes . . . in steel, Monel metal, or corrosion-proof plastic.

### Other Modern Equipment Dispenses Sterling Purified Salt in Bulk, Tablets, Brine

Today's canners benefit from three more efficient, modern salt-dispensing machines available from International. The newest one is the Sterling "Electro-Portioner" Brine Dispenser, which can dispense brine into as many as 300 cans per minute—with consistent accuracy. Also available is the Sterling Saltomat, for depositing Sterling Purified Salt tablets into cans on fast-moving lines . . . and the Sterling Bulk Salt Dispenser, which handles Sterling Purified Salt in dry, granular form.

**FOR COMPLETE DETAILS** on salt dispensers, brine-making equipment, or salt-handling techniques . . . and for expert technical assistance on any problem of salt or brine—get in touch with International Salt Co. One of our "Salt Specialists" will be glad to help you get maximum efficiency and economy from the salt you use.

**International Salt Co., Scranton, Pa.**

*Sales Offices:* Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; Memphis, Tenn.; and Richmond, Va.

**STERLING PURIFIED SALT . . . CANNERS SALT . . . AND BAKERS SALT** are all the same high quality. They more than meet the low requirements for calcium, magnesium, copper and iron for the entire food-processing industry.

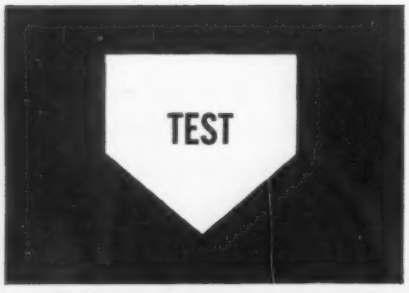
FOR INDUSTRY, FARM, AND THE HOME—

STERLING SALT

PRODUCT OF INTERNATIONAL SALT CO., INC.

Drying of heat-sensitive materials containing volatile flavors from natural and synthetic oils.

## *"GENTLE-IZED"* Spray Drying by NERCO-NIRO




Emulsions of oils and gum arabic solutions were spray-dried on laboratory, pilot and industrial-size spray dryers in the NERCO-NIRO Research Laboratories at Netcong, N. J. Operating conditions for optimum flavor retention through a full range of aromas, concentration and other variables were determined by the test.

Production of spherical, free-flowing particles with stable, "locked-in" flavor proved by its superior shelf life.

Food flavorings and other heat-sensitive food products can be processed the "Gentle-ized" NERCO-NIRO way w emphasis on product quality, yield, cleanliness and econ

*For advice on your industrial food drying problem, consult our Spray Dryer Engineers without obliaation.*

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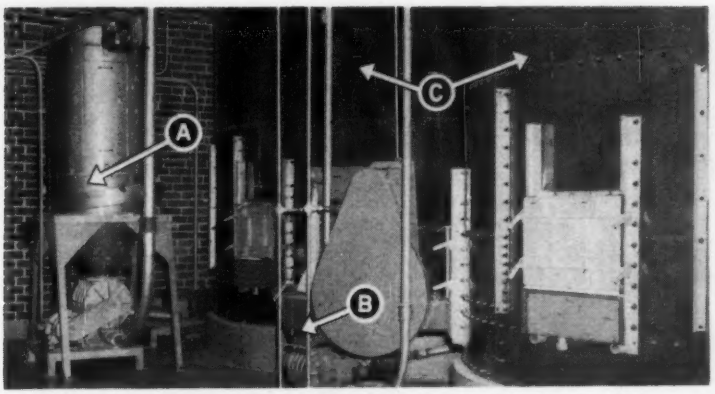
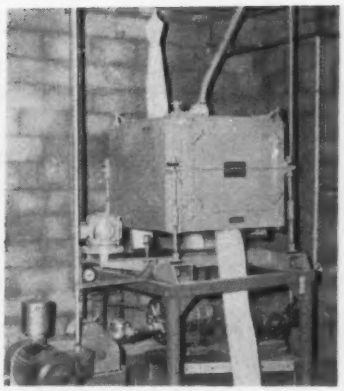
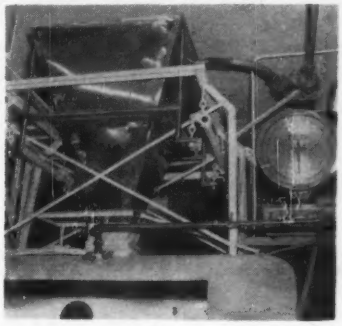



NEGATIVE-PRESSURE UNLOADER (A) handles variety of bulk-flour carriers. Product is transferred to Fluidizer (B), which air-conveys it to storage silos (C).



GYRATORY SIFTER is fed directly from silos. Another Fluidizer (bottom) then sends sifted flour to . . .

. . . SCALE HOPPER (1,200 lb. capacity) above dough mixer. Note automatic diversion line to storage.



# 'Flexible' Bulk System *Speeds* Handling

**Self-cleaning unit empties rail cars, trucks, trailers, sack-dump hoppers. Connecting air-conveyor moves ingredients right to process**

NOTABLE PROGRESS in efficient bulk-handling of free-flowing materials is evident on many fronts in the food industry.

Particularly indicative of this trend is an advanced pneumatic flour unloader recently installed at our Borden Co.'s Lakeshire-Marty Div., East Point, Ga.

Connected to a Fluidizer system (FE Dec. '56, p. 78), the compact stationary unit, developed by Superior Separator Co., provides these benefits:

1. **Replaces heavy portable unloaders.**
2. **Provides flexibility for handling box cars, bulk trucks, trailers, and Airslide hopper cars. (With Airslide adapter removed, unloader can also feed a sack-dump hopper in the ingredient room to fill storage silos.)**
3. **Has a self-cleaning filter.**
4. **Is economical to operate, requiring only 160 cfm. of intake air and 25 hp.**

**C. R. LABUDDE**
Plant Manager, Lakeshire-Marty Co., East Point, Ga.

Here is how our flour goes from RR Airslide cars, through the plant, and into dough mixers.

Adapters on each end of a flexible intake hose (5-in. dia., 25 ft. long) are attached to the car's outlet gate and to a coupling on the outside building wall. Another flexible line (3-in. dia., 30 ft. long) goes to the car's Airslide equipment.

Inside the plant, a stationary steel tube (5-in. dia.) is connected to the intake hose and to the unloader's tangential intake section.

The suction side of the car's blower actuates the unloader, while former's positive-pressure side operates the Airslide mechanism. Flour enters the unloader's tangential adapter, then the Fluidizer valve directly below the unloader.

Latter unit is a cone within a cone, having 6- and 7-in. spaces between outer and inner shells. Flour is introduced, alternately and in a circular manner, between outer and inner shells. A venturi section at the bottom directs a reverse air stream to the inner cone.

Flour is separated from the turbulent stream (300 cfm. at 13 in. Hg.), while air and fines travel upward to a secondary filter within the unloader. Air goes through the filter into a top collecting hood, and then to the blower. Fines drop back to the Fluidizer.

The self-cleaning filter, which rotates at 1,000 rpm. above the unloader's inner cone, consists of a series of vertically-arranged pleated cloths.

From the Fluidizer product goes (at 760 lb. per min.) through 40 ft. of 4-in.-dia. metal tubing to a diverter valve. Latter feeds either of two 100,000-lb.-capacity steel silos, glass-lined and self-unloading.

From these units flour is discharged into another Fluidizer and through 2-in.-dia. metal tubing to a gyratory sifter. It then goes through 2-in.-dia. tubing to 1,200-lb. scale hoppers above jacketed dough mixers.

**MILK IS STERILIZED,** then filled **aseptically into 1-piece** aluminum cans in this Swiss plant. Sterilizing equipment (Uperizer) shown at rear deaerates the milk to prevent oxidation, heats it to 300F., cools and deodorizes it under vacuum. Martin unit (foreground) then cans it aseptically.

# Unit Improves High-Heat Sterilizing

**Removes oxygen, off-flavors and odors during high-temperature treatment to prevent discoloration and development of cooked flavor**

AN OUTSTANDING ADVANCE in the high-temperature short-time treatment of products is a process developed in Switzerland, called Uperization.

This process insures complete sterility of dairy products. At the same time it removes objectionable odors and flavors, and slightly reduces acidity of the product.

When used to preheat milk for condensing, resulting evaporated product is whiter in color, less viscous, and lacks the typical heated flavor of conventionally processed milk.

When used to preheat milk before spray drying, resulting powder has normal dispersibility and a very low bacterial count.

**F. LANG**

Commonwealth Bureau of Dairy Science & Agricutlure, Shinfield, Reading, England

And when used in conjunction with a Martin aseptic canning unit, a sterile product of high quality is obtained.

## Double Vacuum Treatment

The process employs direct heating to about 300F. by live steam injection, followed by cooling through evaporation, and by a tubular heat-exchanger. Deodorization is accomplished during the evaporative cooling.

An unusual feature is deaeration of product at about 130F., which removes between 80 and 90% of the oxygen present. This reduces danger of development of oxidized flavors, and has a beneficial influence by protecting milk constituents that are subject to oxidation during subsequent heating. It also eliminates some of the highly volatile odors.

Actual steps in the process include:

1. Preheating the raw milk to 130F., in a tubular heater.
2. Deaerating under reduced pressure.
3. Heating to about 167F. in high-temperature section of preheater.
4. Sterilizing at 300F. by injection of steam at 8-12 atmospheres.
5. Cooling by expansion at reduced pressure.
6. Further cooling (where desired) with city or chilled water.
7. Storing in sterile tanks provided with special filters to prevent entry of bacteria, or filling into cans aseptically.

Temperature of heating can be raised to as high as 392F. by altering the steam-milk ratio. To prevent local overheating, and still insure that all particles of the milk are uniformly heated, steam is injected through a large number of small ori-

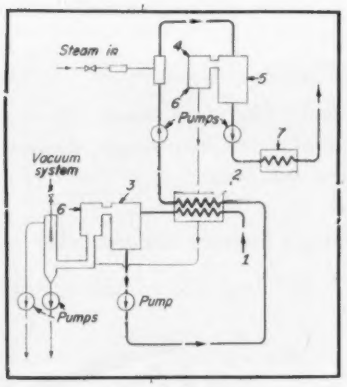
fices. These are arranged along helical lines of the Uperizing head. Size of orifices diminishes, and distance between them increases with distance from the inlet end.

Milk at the desired temperature flows into the expansion chamber. As a result of the sudden reduction in pressure, evaporation occurs and product is cooled somewhat. Undesirable flavors and odors are removed with the vapors.

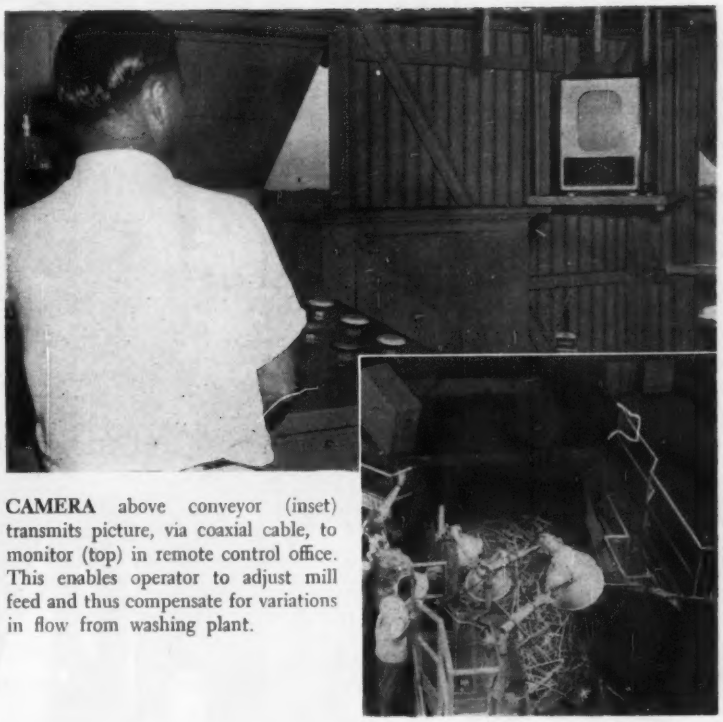
It is claimed that all steam condensate can be removed and solids content of product restored to its original value. This is achieved through proper control of milk temperature during preheating, deaerating, and Uperization, plus control of pressure in the expansion chamber.

Uperizing plants have been produced in just one size—1,100 gph. However, this output can be reduced as low as 330 gph. if desired. Steam consumption at maximum capacity is about 1,870 lb. per hr., with about 13 kwh. of electricity being used for operation of pumps.

Cleaning and sterilizing of the plant is by a special circulation technique. It involves these steps: preliminary water rinse, circulation of 1.5% phosphoric acid solution at 130F. for 20 min., warm water rinse, circulation of 1.5% caustic solution at 130F. for 20 min., a final hot water rinse, and sterilization by steam at 266F. for 30 min.




**HOW UPERIZER OPERATES.** Milk entering at (1) is heated at (2) to 130F., and discharges to deaerator (3). Then it returns to (2), is heated to 167F., goes to Uperizer (4) where steam is injected to raise temperature to 300F. and discharges to expansion vessel (5). Air, steam, volatile flavors and odors are drawn through separators (6) by vacuum system. Milk is cooled in heat-exchanger (7).



**CAMERA** above conveyor (inset) transmits picture, via coaxial cable, to monitor (top) in remote control office. This enables operator to adjust mill feed and thus compensate for variations in flow from washing plant.

# TV Aids Flow Control

**Labor is saved and operations improved by closed circuit system comprising camera above conveyor and monitor in remote control office**

INDUSTRIAL TELEVISION has been successful well beyond management's original expectations at the Hawaiian sugar plantation of Ewa Plantation Co.

Here, its camera views flow and spread of sugar cane being conveyed from the washing plant into the mill. This picture is transmitted to the monitor where an operator regulates volume of flow.

Prior to 1953, it was possible for the control operator to watch the flow of cane. But re-design of the plant necessitated an extra man to stand by at this point and inform the control operator of variations in flow.

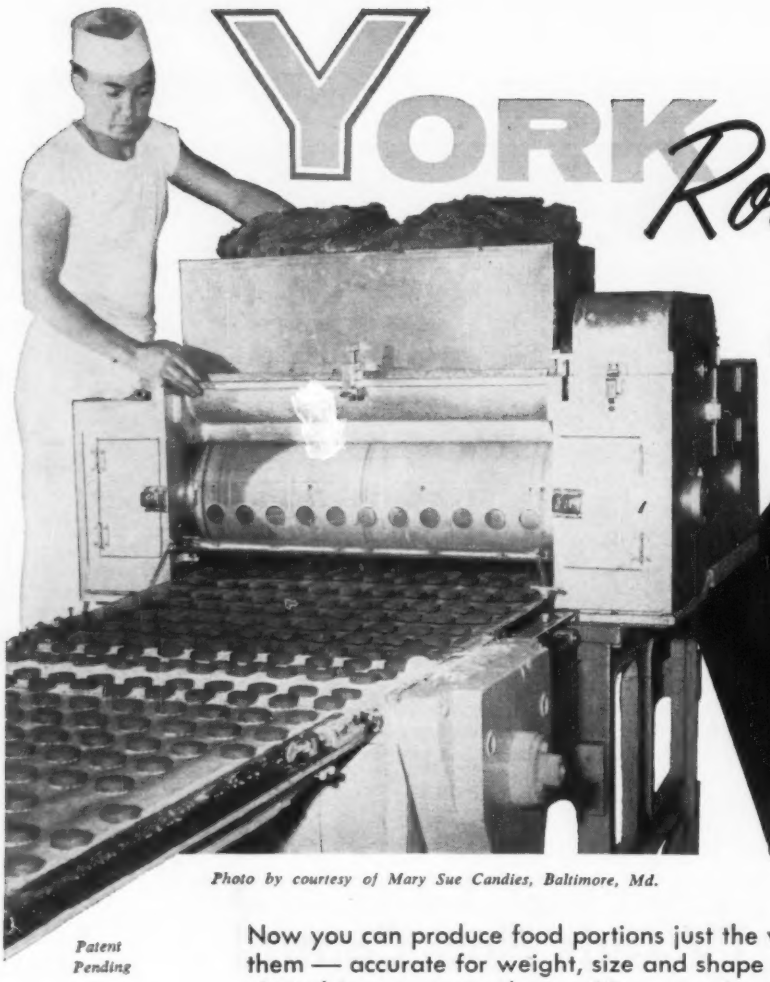
The TV eliminated this watcher. It also provides the control operator with much better and quicker information than the manual signal system.

"And, except for short periods when we have had to slow down," says plant superintendent Frank Wiley, "the TV system has been remarkably trouble free. It's become so completely a part of our organization now that we just take it for granted."

The equipment which cost $7,500 installed, consists of one Diamond Utilities Camera Model 300-B, one Monitor Model 300-B, and one Monitor Model VF-5 (Diamond Specialty Mfg. Co.).

**ADAM SMYSER,**
Special Correspondent, Honolulu, T. H.

# YORK Rotary Portion Former



Cuts Costs... increases production of uniform portions.

*Photo by courtesy of Mary Sue Candies, Baltimore, Md.*

*Patent Pending*

Now you can produce food portions just the way you want them — accurate for weight, size and shape and uniformly ejected in unsurpassed quantities per minute — with the York Rotary Portion Former.

- **Operating on a new principle, the York Portion Former does not extrude but forms and shapes each portion individually.**
- **Vacuum forming prevents damage to the most delicate ingredients so that a wide variety of foods and food mixtures may be used.**
- **Can deposit 1800 small pieces per minute and handle 2500 lbs. of material per hour. Each machine is equipped with a variable speed regulator.**
- **Continuous operation through to fryer or freezer requires no storage between processing stages. Saves valuable plant space.**
- **Cuts costs, too! One York Rotary Portion Former paid for itself in only four months, through reduced labor time and costs.**

***York Rotary Portion Formers are available in three sizes: 16", 24" and 32" widths.***

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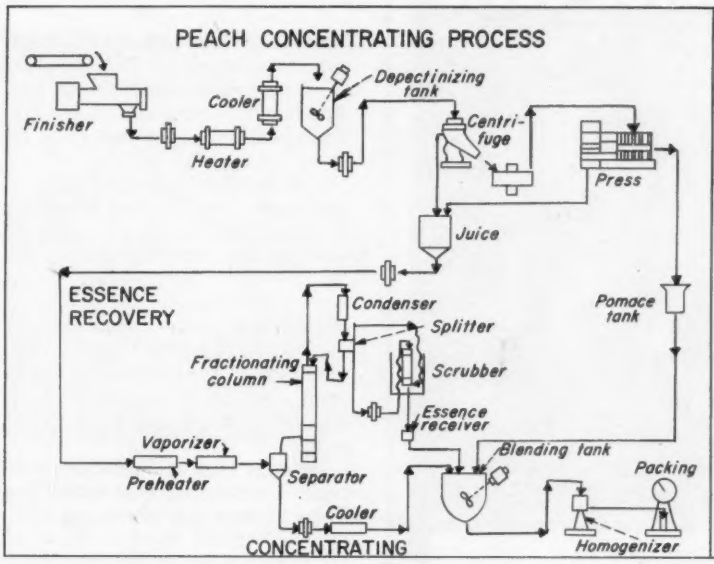



**HEART OF PROCESS** is new atmospheric essence recovery-juice concentrating technique. In it, the depectinized juice is preheated to 220F. and discharged to steam-heated vaporizer where 89% of water is removed. Vapor and concentrate are separated with latter going to cooler and blending tank. Vapors go to packed fractionating column where they are concentrated 150 times original strength, then condensed and cooled to 190F. Essence and noncondensable gases are separated in splitter. Essence is chilled in packed column where vent gases are scrubbed and discharged to atmosphere. Essence flows to receiver. Final steps comprise blending essence, concentrate and pomace, homogenizing mixture, packaging for freezing.

# Makes Better Peach Concentrates

**New process that makes high-density products for ice cream, beverages and jellies seen absorbing surplus fruit, thus stabilizing peach market**

KEY TO PRESERVATION of fresh flavor in peach concentrates is the rapid inactivation of natural occurring enzymes early in the process and recovery of volatile flavor during concentration.

With this in mind, we at EURDD have developed methods for preparation of the following types of concentrated peach products:

1. An unsweetened whole puree that has seven times the flavor of the original peach. This product is intended primarily for intensifying the flavor in peach ice cream.

2. A frozen nectar concentrate for beverage use.

With slight modifications, the processes may be applied to apple, grape*, cherry, and berry juices.

Briefly, the technique consists of pitting, peeling, pureeing, enzyme inactivation, depectinization, juice-fiber separation, aroma recovery, juice concentration, and restoration of aroma and fibers to concentrate.

## Preparing the Products

In the processing steps, every effort is made to minimize exposure of fruit to flavor and color damaging conditions.

**Preliminary Steps.** Pitted peach halves of mature fruit are pureed immediately following steam peeling, by means of a cylindrical juice extractor having an 0.033 in. screen. Discharge of the unit was modified to combine tailings with material passing through the screen.

Elimination of rapid enzymatic browning is accomplished by rapid heat treatment employing two heat exchangers with a holding coil between.[1] Puree is heated to 180F. in first unit, held for 2 sec. in the coil, then cooled to 100F. in second unit. Residual activity of polyphenolase is 0.1% or less.[1]

Puree leaving the second heat exchanger is treated with Pectinol 10M (Rohm & Hoos)** (8.6 oz./100 gal.) for ¾ hr. to facilitate juice-fiber separation and permit high juice concentration without gel formation.

L-ascorbic acid is added (1.5 oz./100 lb. of puree) during depectinization to prevent normal oxidative browning. In the nectar type concentrate, this has the additional advantage of placing it on a comparable level with other beverages that are rich in natural occurring vitamins.

**Juice-Fiber Separation.** Removal of fibers from the juice is necessary in order to achieve a high degree of concentration.

This was achieved with a Harris bag press.** Fibrous material is held for blending with essence and concentrate.

**Flavor Recovery and Juice Concentration.** This was done by stripping aroma from the juice and fractionating the vapors involved. The stripped juice was concentrated

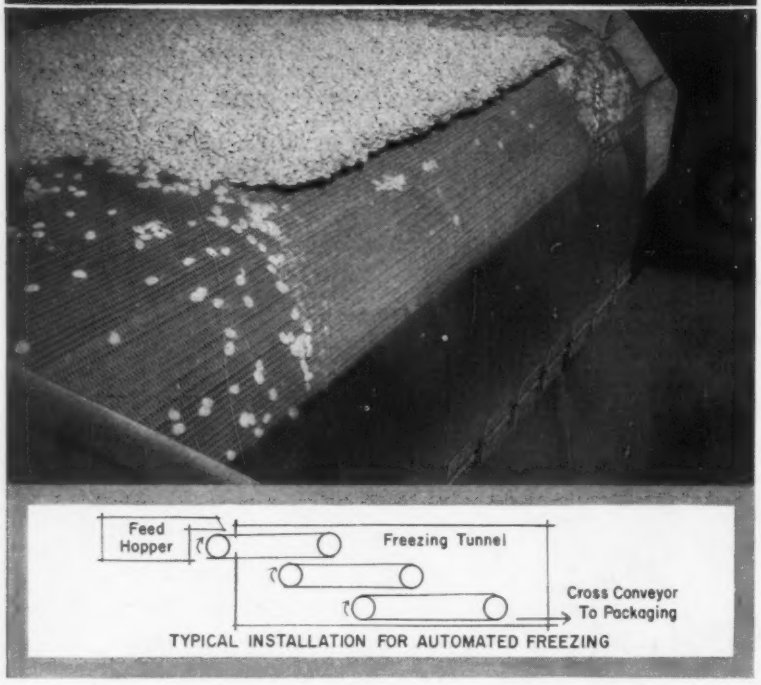
*For application of the process to grapes see "These Concentrating Advances Bring Superior Flavors". (FE, Dec. '57, p. 90)

**Mention of specific manufacturers or products does not imply endorsement by the Department over others not mentioned.

**NELSON H. EISENHARDT, NICHOLAS C. ACETO, JOSEPH B. CLAFFEY and CLIFFORD S. REDFIELD**

Eastern Regional Research Laboratory, Philadelphia.

# Cambridge WIRE MESH BELTS



TYPICAL INSTALLATION FOR AUTOMATED FREEZING

## All-metal belts resist sub-zero temperatures in continuous processing

Continuous freezing on Cambridge Wire Mesh Belts helps maintain capacity production and assures more uniform processing. Open mesh permits free circulation of cold air through belt and around product for fast, uniform freezing. All-metal construction is rustproof, coldproof; cannot absorb odors; a quick spray or steam cleaning maintains sanitary requirements.

In washing, inspecting, baking and cooling operation, too, Cambridge belts cut operating costs and reduce manual handling. Here's why:

**CONTINUOUSLY MOVING BELTS ELIMINATE BATCH PROCESSING** for faster, more economical production.

**OPEN MESH PERMITS FREE DRAINAGE** of wash solutions, dirt, grit; allow free heat and air circulation for uniform baking, drying.

**ALL-METAL CONSTRUCTION GIVES LONGER SERVICE:** there are no seams, lacers or fasteners to break or wear.

**SPECIAL ATTACHMENT AVAILABLE;** raised edges and cross flights hold product on belt during inclined movement.

**Talk to your Cambridge FIELD ENGINEER soon—he'll explain the many advantages of continuous food processing on Cambridge Wire Mesh belts. He'll recommend the belt size, mesh or weave—and the metal or alloy—best suited to your operations. You'll find his name in the classified phone book. Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.**

**The Cambridge Wire Cloth Co.**

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

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by a single-pass atmospheric technique developed by Eskew et al.[2] (The manufacture and use of volatile fruit concentrates are subject to the regulations of the Bureau of Internal Revenue.[3])

For the puree concentrate, the entire pomace from the juice extraction along with the recovered volatiles are blended with the concentrate, and the mixture homogenized to a smooth consistency. The product is made 7-fold with respect to the single strength puree. Degree of concentration of the juice is dependent upon desired fold of finished product and moisture (juice) content of pomace.

**Beverage Nectar:** To obtain an acceptable sweetness in the nectar, the Brix-acid ratio was altered by addition of sucrose, equal to 93% of the soluble solids in the juice, prior to flavor recovery. Increasing the Brix also results in reduced vaporization required to achieve desired concentration in a single pass. In determining the amount of pomace addback, effect of seasonal variation of insoluble solids content of the fruit must be taken into account.

Desired consistency was obtained one year by adding 100% of recovered pomace. However, only 50% was required the following year. Taste panel members considered consistency of reconstituted nectar to be satisfactory if apparent viscosity was between 95-120 centipoises as measured by a Brookfield** viscosimeter.

Sweetened concentrate, pomace and recovered aromas are blended, then the mixture is homogenized for smoothness. Soluble solids content of the nectar was established at 51.4 Brix, so that dilution with three volumes of water resulted in a 15 Brix beverages. This was a very palatable drink having a fresh flavor and natural color.

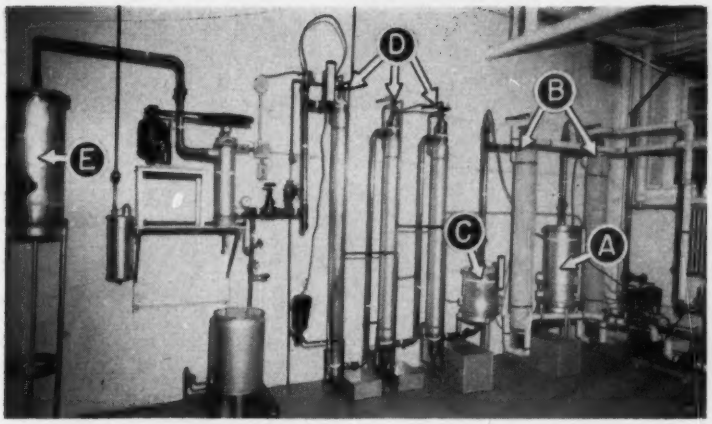
*Acknowledgment: The authors wish to acknowledge the technical guidance given by Roderick K. Eskew of this Division, and the valuable assistance rendered by H. S. Morrison, Braddock Frosted Foods, Inc., Hammonton, N. J.*

### References:

1. Dimick, F. P., Ponting, J. D., and Makower, B. Heat Inactivation of Polyphenolase in Fruit Purees. Food Technology 5, 237, 1951.

2. Eskew, R. K., Claffey, J. F., Aceto, N. C., and Eisenhardt, N. H. Rapid Atmospheric Evaporator Simplifies Juice Concentration and Improves Flavor Recovery. To be published.

3. Code of Federal Regulations, Title 26, Internal Revenue, 1954, Part 198 and subsequent issues.




**IN HONEY PASTEURIZER,** blended product is pumped to pre-strainer (A) then goes through heat exchangers (B) which flash it to 155F. Product is strained again at (C), then enters coolers (D), finally discharging to storage tank (E).

# Pasteurizes Honey Continuously

## Unit designed to kill yeast spores, greatly delays crystallization, too

NOW IN COMMERCIAL USE by a number of Canadian processors is a new continuous flow pasteurizer that improves keeping quality and enhances appearance of strained honey.

The equipment, developed by Ontario Agricultural College, consists of three copper tubes placed one inside the other. Honey moves through a $\frac{1}{8}$-in. passage between the two inner walls. Heating water flows in the inner and outer tubes. Similarly designed coolers are also used.

To make the process automatic, two Powers No. 11 self-operating temperature regulators (Powers Regulating Co., Skokie, Ill.) were installed, with their bulbs in the streams of honey. One regulator controls temperature of hot water in the pasteurizer, the other the cold water used in the coolers.

Regulator bulbs are connected by capillary tubes to diaphragm-operated valves on the hot and cold water supply lines.

"Flash pasteurization takes place at 155F.," according to Prof. G. F. Townsend, co-developer of the process. "The heat kills fermentation-producing yeast spores. But unless the temperature is accurately controlled, the honey will change color and flavor."

Further heating to 170F. for 5 min., or to 180F. for 2 min., delays crystallization of the honey up to 18 months.

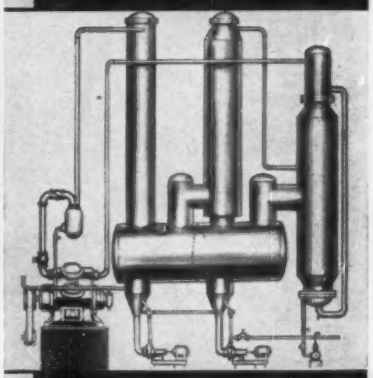
Operation begins with blending and straining batches of honey. There is simultaneous heating to 120F. to reduce viscosity and increase straining efficiency. Primary object of this straining is to remove foreign materials, such as beeswax, that may affect the flavor at higher temperatures.

The honey is pumped to the pasteurizer. If it is to be packed as a regranulated product, it goes directly to the coolers, where the temperature is reduced to 75F. When packed as a liquid, however, it is strained between pasteurization and cooling, and the temperature is lowered to merely 100-120F.

When heated with hot water and cooled with well water, two heating and three cooling units will handle 325 lb. of regranulated product per hour. For the liquid product, one cooler is sufficient.

Blueprints and *Circular 216*, describing the device, are available from the Ontario Agricultural College, Guelph, Ontario, Canada.—*End*

Mojonnier
LO-TEMP
EVAPORATOR
FOR PREMIUM QUALITY FOOD CONCENTRATES



▶ no boiler required.
▶ uses negligible amount of condensing water.
▶ no sewage disposal problem.
▶ less operating attention.
adds up to lowest *concentrating cost!*

Typical applications include:
• Chicken Broth • Beef Broth
• Oyster Broth • Citrus Juices
• Whole and Skim Milk • Fruit Juices

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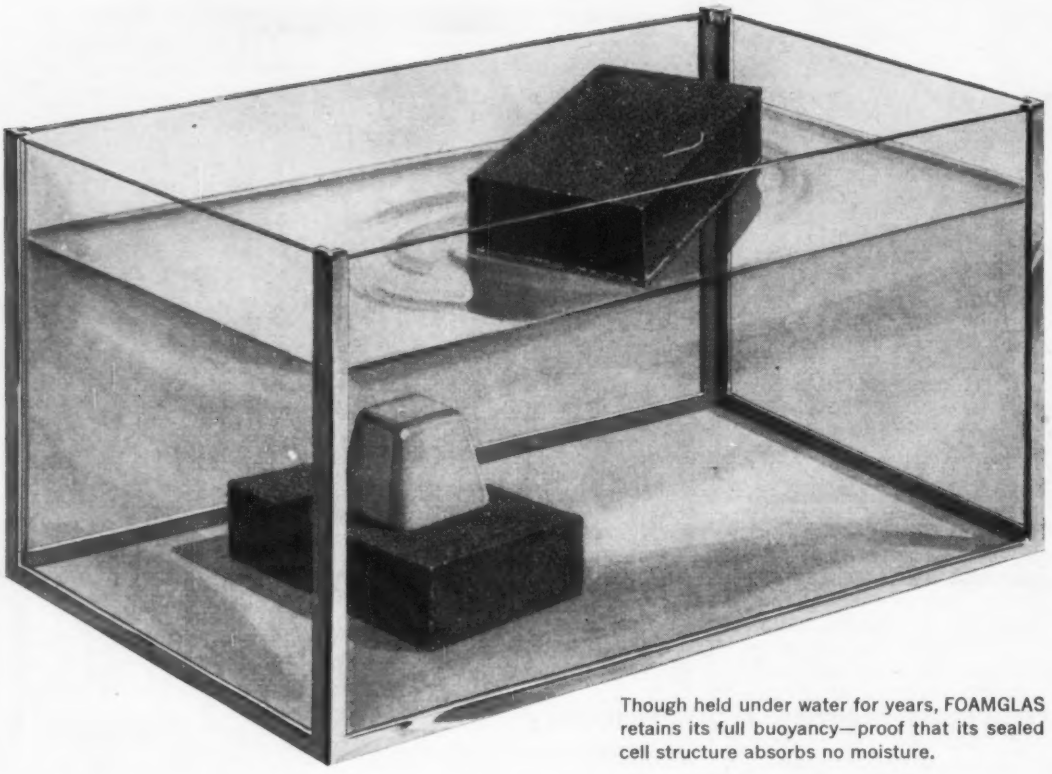

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## ... not just water-resistant!

FOAMGLAS insulation stays dry before, during and after application—maintains its original insulating value on the ceilings, walls, floors, piping or equipment it protects. Since FOAMGLAS is completely inorganic, it can't burn, is vermin-proof and dimensionally stable. Write for our latest literature.

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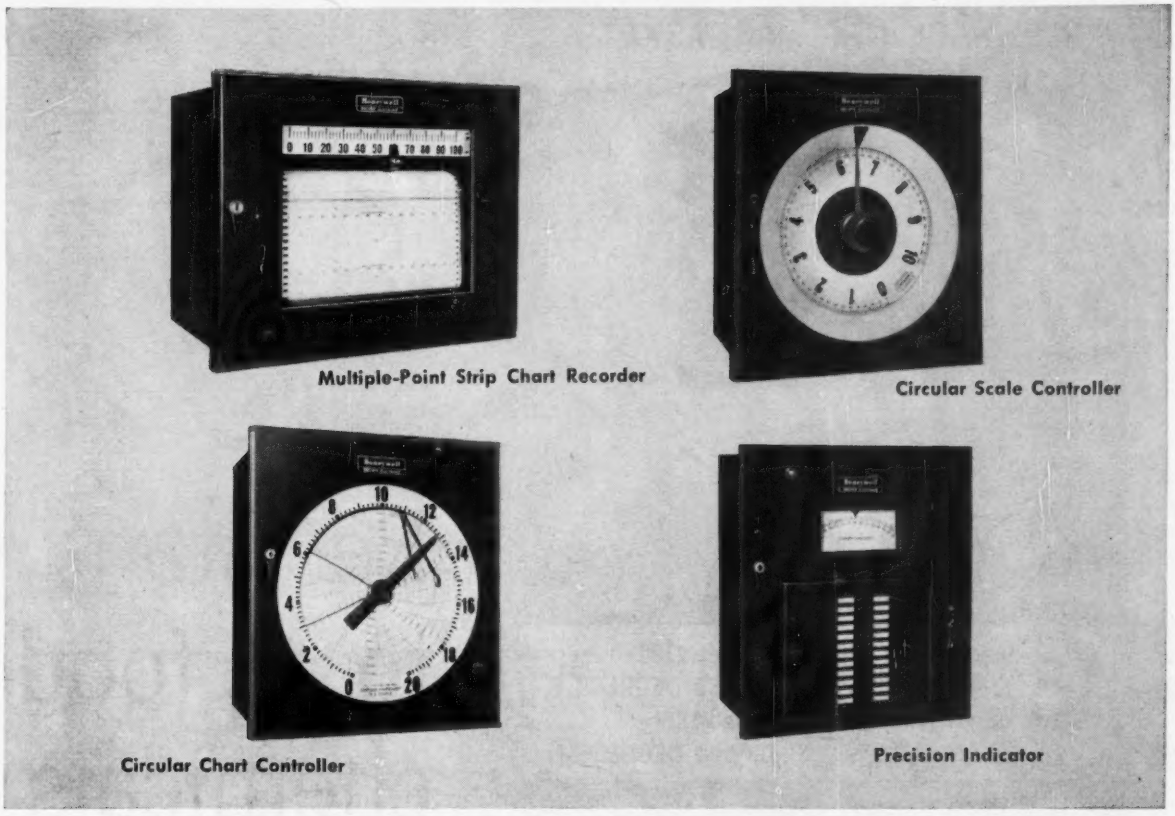


# Improve your process with simple, easy-to-maintain *ElectroniK* instruments

USE *ElectroniK* INSTRUMENTS WHEREVER YOU NEED PRECISE, SENSITIVE MEASUREMENT

•

Unmatched variety of models for pH, redox, strain, temperature, pressure and other variables.

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You can mount *ElectroniK* instruments as far as 1500 feet from your process without loss in performance. That means you can concentrate all process data on centralized instrument panels . . . and thereby increase operating efficiency. There are no capillary lines to break . . . no need for instrument recalibration in case of a broken wire, which is easily spliced.

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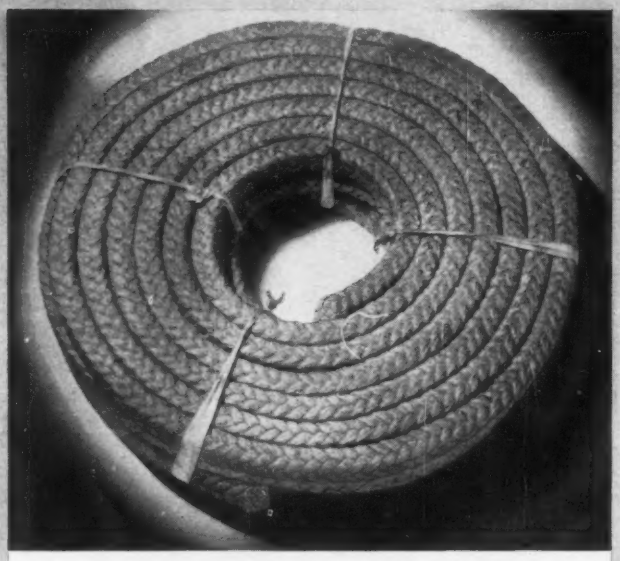
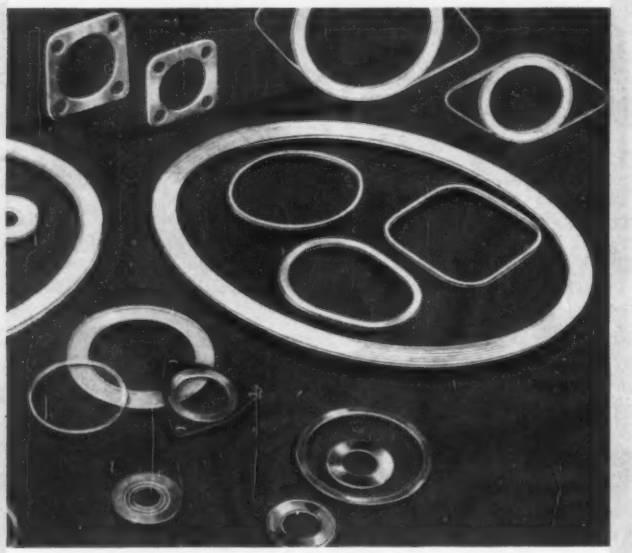
## ROD PACKINGS AND GASKETS



U. S. White Lubricated Packing (Style #181)
FOR TEMPERATURES UP TO 150 DEGREES F.
U. S. Braided Teflon Packing (Style #135)
FOR TEMPERATURES UP TO 500 DEGREES F.



U. S. Teflon Gaskets
FOR TEMPERATURES UP TO 500 DEGREES F.

# Resistant to all food chemicals

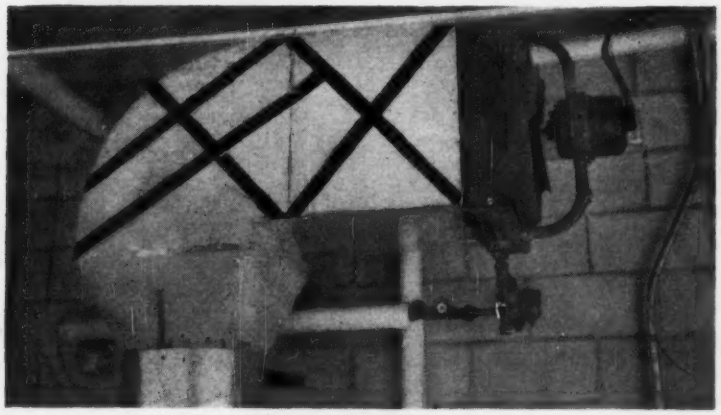
These Pump and Valve Stem Packings are specially designed for the food industry. Being chemically inert, they are non-toxic.

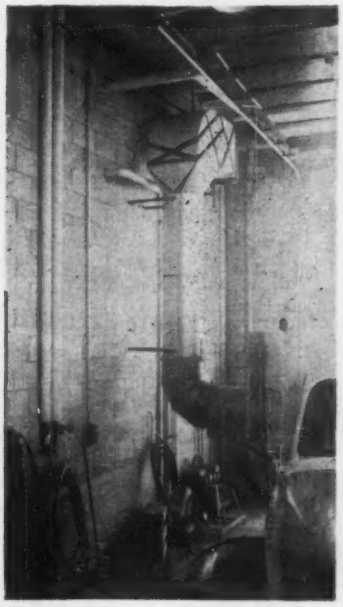
Specify U. S. White Packings (Style #181) for temperatures up to 150 degrees F.

Specify U. S. Braided Teflon (Style #135) for temperatures up to 500 degrees F.

These packings are available at any of the 27 strategically-located sales offices, or write United States Rubber, Mechanical Goods Division, Rockefeller Center, New York 20, New York.

Mechanical Goods Division
**United States Rubber**





## Quick Method for Defrosting Truck Body

Here is an idea that has saved us a lot of valuable time in defrosting ice cream trucks.

Previously, it was necessary for a truck to be laid up 24-48 hr. with the doors open in order to defrost at garage or outside temperatures. Now we are able to defrost it in 1½ hr., and completely dry it in 5 hr.

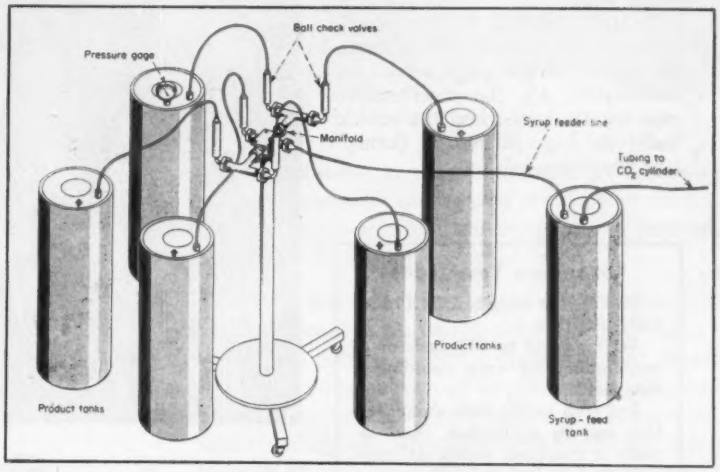
We installed a steam heater unit in our garage (left photo) plus a duct to conduct the heated air from it to a truck (right photo). To operate, all truck doors are opened 3-4 in. Then elbow in duct is turned so the extension goes through one door of the body. Finally, blower of heater is turned on.—*Charles E. Fisher, Production Manager, The Borden Co., Columbus, Ohio.*

## Fills 5 Tanks at Once With Special Manifold

Only 5 min. are required to fill 5 syrup pre-mix tanks by our simple hook-up. Meanwhile, the operator mixes the next batch.

Here's our five-step operation:

1. One of five tanks is connected to syrup-feeder line (see sketch).
2. $CO_2$ is injected to 10 psi. on tank gage.
3. Tank is placed in position to be syruped (along with four others).
4. About 50 psi. $CO_2$ is applied to the syrup-feed tank.
5. When the gage reads about 16 psi., and the syrup-feeder line is pulsating, feed tank is disconnected. Then the other five filled tanks are taken from the line.



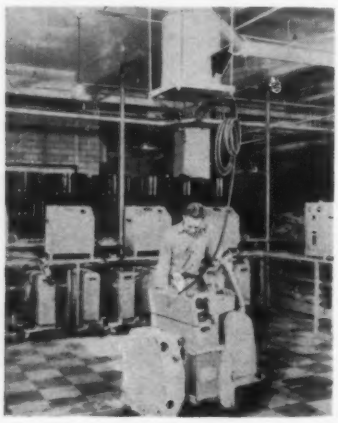

Pressure in each tank will be 10 psi. This can be checked by moving the gage to each one if a faulty tank or connection is suspected.

The initial pressure forces syrup through the feeder line and into the stainless steel manifold (made from one cross, two tees, and five vertically-mounted ball check valves).

Once the syrup begins to flow it follows the path of least resistance, and this maintains the balance. For example: If syrup flows more rapidly into one tank, the greater volume of fluid in that tank will increase the gas pressure above that of the other tanks. The obvious result is that syrup will be diverted to the tanks

with lower pressure until the pressures and syrup volumes of all the tanks are equal.

Bonus values of this system: Condensation problem is eilminated, tank washing is required only when returned from the trade, and there is no more insect menace.—*A. J. Morgan Jr., Norfolk Coca Cola Bottling Works, Inc., Norfolk, Va.*



## Quick Battery-Water Refills

An overhead crock (arrow), filled with battery-water, simplifies the job of replenishing evaporated liquid in truck batteries at Nabisco's Pittsburgh bakery.

Centrally located in the plant's well-equipped battery service room, the supply affords quick service on electrolytes. All the maintenance man has to do is wheel the vehicle under the large jar and fill through a nozzle-controlled hose.

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Just send us the facts about your idea and its application. And include a free-hand sketch or snapshot to show how it works.

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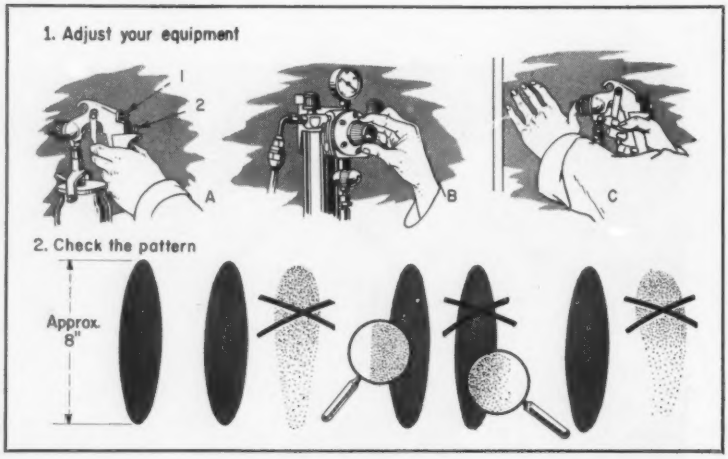
Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.




## Testing Spray Guns for Satisfactory Operation

Here's a simple way to check the efficiency of your spray gun:

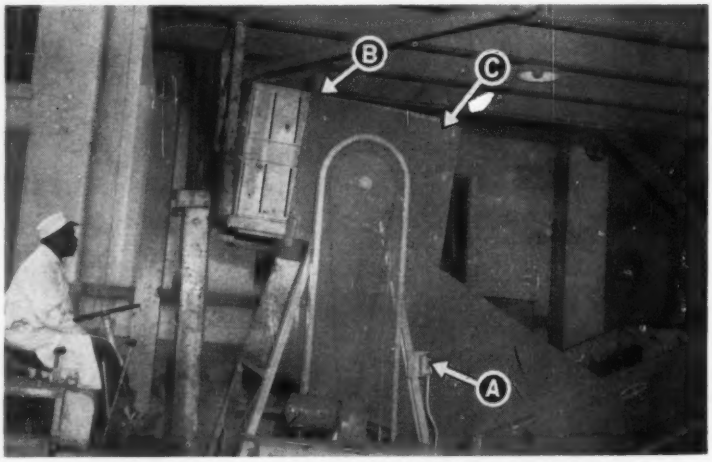
A. Open the gun wide by turning spreader adjustment (1) full open and backing off fluid screw (2) until first thread shows (top photos).

B. Adjust air transformer to 40 lb. pressure for lacquer and acrylics, or 60 lb. pressure for enamel.

C. Hold gun 6-8 in. from test surface, give trigger one full pull, then release.

Check pattern to be sure that: Coverage is uniform from top to bottom; (left, illustration above); atomization is uniformly fine (center, and pattern is true and free from distortion (right).

If any of these fail to check, the gun is defective and can result in a waste of material, time, and effort, as well as poorer quality jobs, engineers from The DeVilbiss Co. Toledo, Ohio warn.—FE Staff.




## Unit Dumps Boxes of Green Vegetables Quickly

Dumping of green beans from field lug boxes into our deleafer unit is speeded by a unit we devised.

Boxes are loaded into the dumper with the aid of a fork truck. Operator then switches (A in photo) on a reversible chain drive mechanism that tilts the crate allowing contents to spill onto a woven wire belt (Cambridge Wire Cloth Co.) carrying the beans up into the deleafer.

The box is held in the unit by a

*The Importance of*

# SYNCHRONIZED SUPPLY AND DEMAND

Mid-air refueling at today's fantastic jet speeds calls for precision teamwork on the part of the plane crews . . . and for carefully coordinated planning by the men who pre-arrange the time and place of the "meet".

Teamwork and coordinated planning . . . a smooth-working combination of management, sales and production . . . are an essential part of the Metro operation, too! Together this group is serving packers of soluble coffee, jams and jellies . . . brewers, vintners and distillers . . . bottlers of household chemicals and other diversified products. Each of these Metro customers finds METROmatic service ideally suited to his particular requirements, delivering quality glass containers on an unfailing schedule.

## METRO GLASS COMPANY, INC.

MANUFACTURERS OF QUALITY GLASS CONTAINERS

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# ONION AND GARLIC?

*Then You'll Want To Try the Two New D&O Products*

## DOLCOSEAL ONION AND DOLCOSEAL GARLIC

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**FRESH OIL FLAVOR**

**INSTANT SOLUBILITY**

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DOLCOSEAL ONION AND GARLIC are spray-dried products made from pure, natural oil, of a quality available only from D&O. Equal in flavor strength to dehydrated onion and garlic, their stability and storage life far exceed that of the former. They are instantly soluble in water, yielding a crystal clear solution and non-hygroscopic (will not cake in storage or ball up in a slurry.) The flavor and aroma are that of natural onion and garlic, and are instantly available, requiring no time for leaching out. In most applications, starting recommendations call for the use of one pound of DOLCOSEAL ONION or GARLIC to replace one pound of dehydrated material. Write today, or contact your D&O representative for trial quantities!

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OUR 159th YEAR OF SERVICE

**DODGE & OLCOTT, INC.**

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PERFUME BASES • ESSENTIAL OILS • AROMATIC CHEMICALS • FLAVOR BASES • DRY SOLUBLE SEASONINGS

cross bar (B) and two retaining lugs (C). Return is effected by running the drive in reverse.—*Webster McAllen, Plant Superintendent, Coastal Foods Co., Cambridge, Md.*

## Unique Danger Signal

Here's a good way to protect people from accidents due to overhead construction or maintenance.

It's a brilliant yellow, diamond-shaped sign (photo) with "Men Working Above" in bold black letters. And as a further attention attracter, it has two red flags mounted on the top.

The Hubinger Co., Keokuk, Iowa recently purchased four of the signs to be used by any department doing overhead work. For convenience, they are stored in the plant production and safety foreman's office and can be checked out when needed.—*The Hubinger Kernel.*

## Tire Chain Key Ring

Here's a simple device that has saved myself and others a lot of headaches.

We have a number of delivery trucks that are kept locked at night, and several warehouses that are locked most of the time. Drivers have keys to their trucks, but duplicate keys and those to the warehouses are kept on a ring in the plant.

When an early morning driver forgets his key, or needs to obtain sup-


# ALL FROM ONE SOURCE

*Each for its special job!*

**SA**—streamlined balloon jacket design. Extra large diameter provides greater heating surface. Sizes 15 to 500 gallons. Constructed for steam working pressures of 40, 90 and 125 pounds.

Hamilton kettles are quality engineered, designed for greater efficiency. You save on labor and costs of operation. Each part of a Hamilton Stainless Steel Kettle is designed for longer life, rugged usage; steam jacketed kettles are faster cooking, easy-cleaning. Specify Hamilton A.S.M.E. Code mixing and cooking kettles.

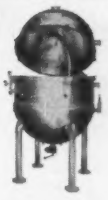
**SA MIX COOKER**—has single or double motion agitator with or without hydraulic lift. Agitator lifts easily and smoothly out of cooker. Sizes 30 to 500 gallons.

**CW**—designed to process batches up to 150 gallons. Positive worm gear. Handwheel gives control of capacity loads while tilting. Large diameter kettle gives fast even cooking.

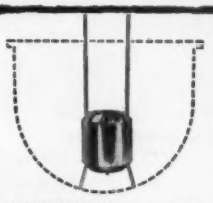
**CW MIX COOKER**—a hydraulic lift tilts agitator smoothly and easily out of tilting kettle. Available for 40, 90, 120 pounds steam working pressure.

**PC**—stainless steel pressure cooking kettle for meat and poultry processing. 90 p.s.i. in jacket and 15 p.s.i. in kettle. Quick opening latches. Top is lifted by eccentric lever. Sizes 30 to 250 gallons.

**HV**—vacuum cooker from 150 to 500 gallons. Hinged manhole provides access to the inside. Available with a mixer—circulator can be installed to increase heat transfer and agitation.



**VT**—vacuum cooker has no equal for small batches. Tilting top, easy loading. Sizes 30 to 150 gallons. Jacketed for 90 p.s.i. steam working pressure.



**CIRCULATOR**—stainless steel steam immersion heating unit installed in kettles of any size or shape. Gives heating surface at the center of kettle. Creates thermal agitation. Speeds up cooking 45%.

**SB**—shallow type kettle with balloon jacket. Streamlined. Constructed for working pressures of 40, 90, and 125 pounds. Sizes 15 to 350 gallons. Larger size kettle to meet specifications.

**A**—general purpose steam jacketed kettle used in processing food, drugs, and chemicals. Full ⅗ jacketed. 15 to 500 gallons. Available in Type 316 stainless steel or nickel. Larger sizes to specifications.

ESTABLISHED 1876

**HAMILTON** Kettles

DIVISION OF BRIGHTON CORP.

820 STATE AVENUE
CINCINNATI 4, OHIO

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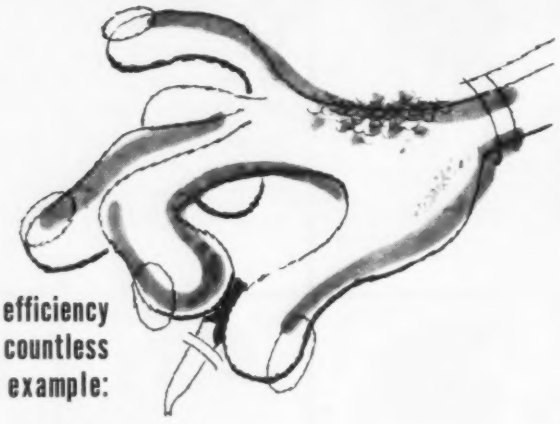
# DOW CORNING SILICONE DEFOAMERS



have proved their efficiency and versatility in countless applications. For example:

**1 OUNCE KILLS FOAM IN . . .**

- **8,333 lb** meat sauce
- **15,625 lb** dill pickle processing solution
- **35,000 lb** vitamin $B_2$
- **250,000 lb** molasses

Just a few drops of Dow Corning Antifoam A Compound or Antifoam AF Emulsion can prevent mountains of foam . . . enabling you to utilize full productive capacity and put your processing into high gear. What's more, when you control foam, you eliminate the mess and waste of boilovers. Whatever *your* foaming problem, a Dow Corning SILICONE DEFOAMER will help solve it at amazingly low cost.

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Oil system

Aqueous system

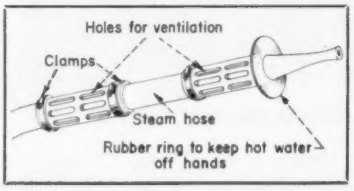
Food products

Other


## Practical Ideas

plies from one of the warehouses he uses the plant keys. And frequently, he would forget to return the ring to the plant. This necessitated cutting locks when someone else needed supplies.

One day I picked up a piece of truck tire chain and wondered what would happen if I fastened it to the key ring. Would it be too heavy to carry in a persons pocket? I tried it (see illustration above) and, since that day, the keys have always been in their place.—*Raymond Coffelt, Milk Foreman, Sunflower Co-op Creamery, Everest, Kan.*




### Hose Ring Protects Hands

In our plant, the cleanup men were in the habit of wrapping paper towels around the steam hoses to keep from burning or scalding their hands.

To overcome this difficulty, I took pieces of larger hose, cut slots for ventilation, and clamped two of them near the end of each hose (see illustration). Two separate pieces were used so the hose would remain flexible. I also fastened a rubber ring on hand hold nearest end of the hose.

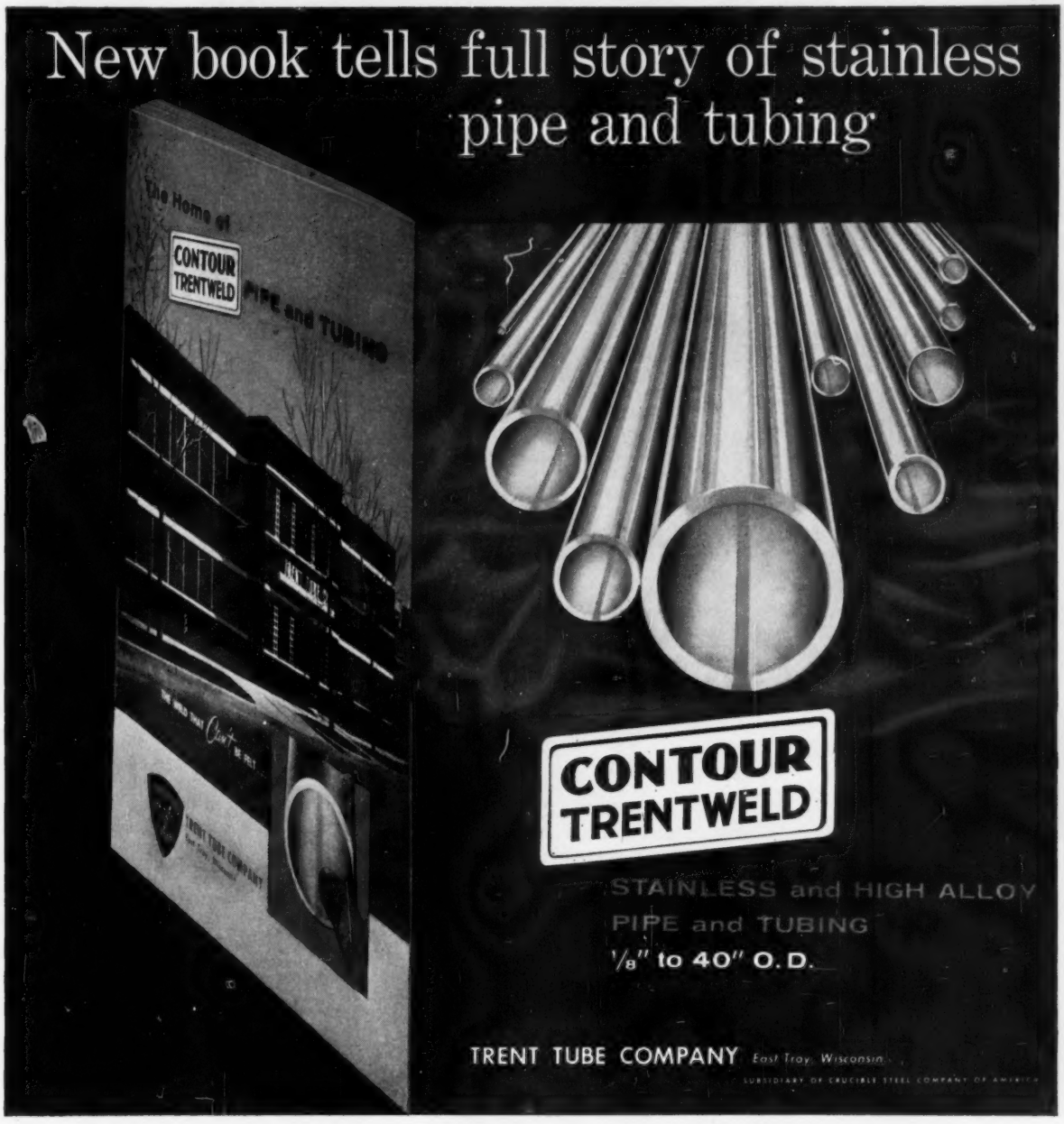
Now the cleanup men don't have to worry about the hose being too hot, nor about hot water running down it and scalding their hands.—*Floyd Wise, Engineer, Southern Dairies, Inc., Ashville, N. C.*

### Fastening Glass to Metal

Here's a method for soldering glass to metal.

Slightly abrade the glass surface with a grinding wheel. Then fill the wheel with solder by holding bar of solder against it as it turns. Carefully go over the abraded glass surface with the grinder. Use this solder deposit to join the glass to the metal part. You'll find the resulting joint nearly as strong as a metal-to-metal joint.—*Linde Tips, Linde Co., New York.*

# New book tells full story of stainless pipe and tubing




If you use stainless or high alloy pipe or tubing, this new illustrated handbook was written for you. It's 48 pages big – packed with informative data that you'll refer to again and again.

The table of contents is too long to list here, but it includes, for example, analysis and conversion tables, corrosion characteristics, weights, alloy properties, bending, joining and installation hints.

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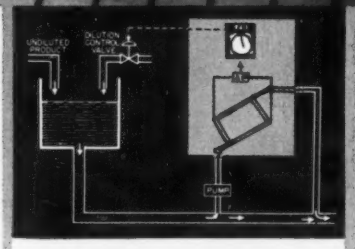


The Plastometer makes use of a simple flow bridge to produce a pressure differential between two reference points. This differential pressure is a direct function of the concentration of insoluble solids in the slurry, and is independent of the viscosity of the liquid phase of the slurry. In the typical installation above, a recording controller is used to throttle a dilution valve as a means of maintaining desired consistency.

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*Complete Process Instrumentation*



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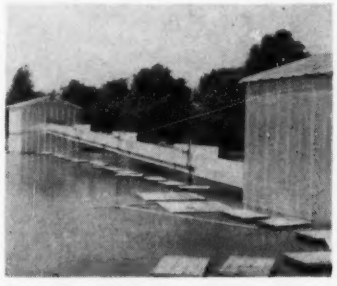
## Wall Cabinets Look Fine

Fitting flush with the walls, office cabinets (photo) at A. F. Murch Co., Paw Paw, Mich. improve appearance and housekeeping, and save space.

In this case the cabinets extend back into an office-supply room on the other side of the wall.

Best thing about it is the lack of "junk piles" on top of the cabinets.—*FE Staff*



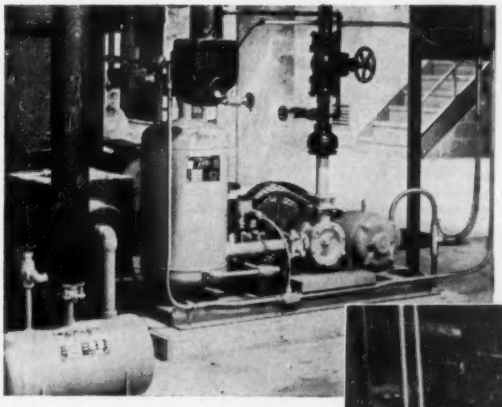
## Cans Cooled in Roof Unit

Roof mounting of this can cooler (photo) conserves floor space and avoids in-plant steam conditions at A. F. Murch Co., Paw Paw, Mich.

Housings at infeed and discharge prevent snow and ice build-up on belt drives during winter months.

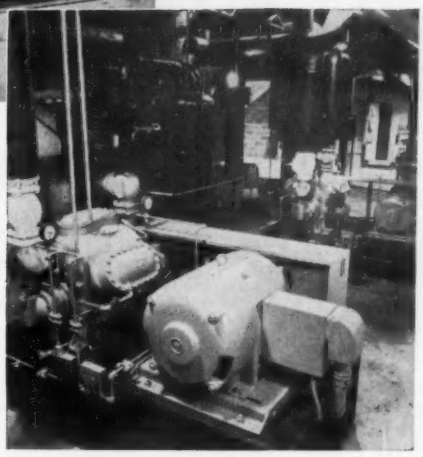
Cooling water (100 gpm.) feeds through four 1-in. pipes into galvanized vats with perforated bottoms. (Vat dimensions: 6 in. x 10 in. x 7½ ft. Holes are ⅜ in. on 3-in. centers). Discharge is through six 4-in. downspouts.

The 80-ft. unit is easily accessible on the roof. And it handles 110 to 125 cans of fruit juices (46 oz.) per min.—*FE Staff*

The compact Vilter Liquid Transfer System, shown to the left, gives complete protection against liquid slugs.

Engine room showing a Vilter 6-cylinder VMC ammonia compressor and a Vilter 4-cylinder VMC Booster.



**IRVINDALE FARMS DAIRY goes modern with VILTER**

● Last year Irvindale Farms, Inc., of Atlanta, Georgia, moved into an attractive new building, which made this dairy and ice cream plant one of the most modern in the area.

The modernization program called for additional capacity in the form of two-stage compressor equipment for low temperature freezing, a new evaporative condenser, an ice builder for the high temperature dairy cooling load, a blast freezer for ice cream hardening, and a new liquid transfer system. "All Vilter" equipment was specified.

All components in a Vilter system incorporate the latest in engineering skill and industry practice. VMC compressors, for example, offer maximum capacity in a minimum of space, a feature so important in modern plants where space is at a premium. Built-in capacity reduction permits automatic operation at reduced loads with consequent power savings. Static and dynamic balancing permits installation anywhere, reduces vibration to the vanishing point. These and other modern VMC features follow the principle of practical design—a modern principle followed through in the production of all Vilter equipment.

You, too, like Irvindale Farms, can have all the advantages of modern refrigeration—specify Vilter.

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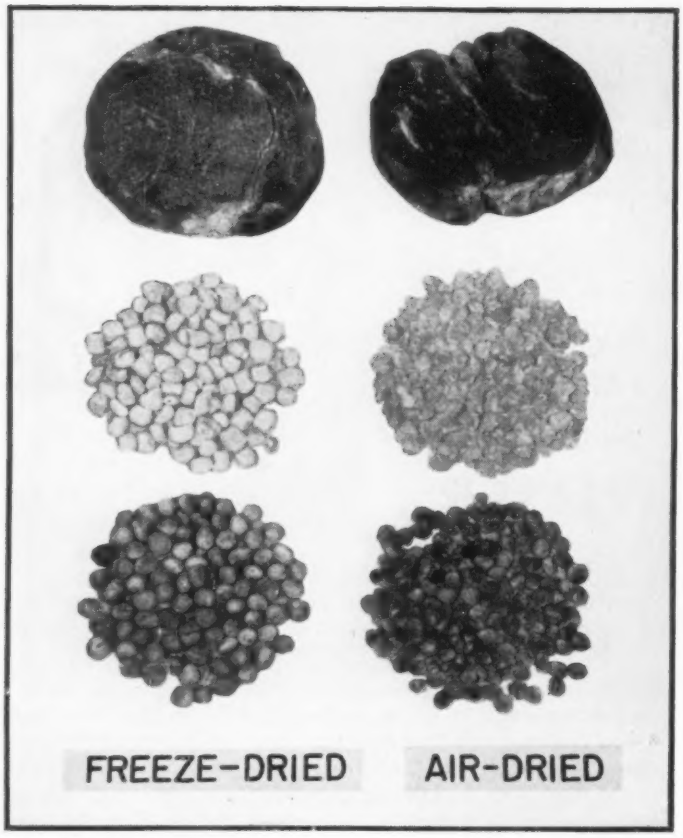
# Freeze-Drying Ups Quality

**Their processing is still costly—but higher acceptability and handling economies more than justify the new-type foods . . . Details on technique and products . . . How industry can speed output for both military and civilian use**




**APPETIZING APPEARANCE** of freeze-dried items (left) is a prime military morale factor. Note shrinkage and darkening of air-dried products.

QUICK-SERVE MEALS, based either on freeze-drying or irradiation, are now top-priority items with military subsistence planners.

True, irradiation has considerable potential as a processing technique. But three prime criteria for rations—acceptability, cost, and combat effectiveness—led QM researchers to freeze-drying as the main source of supply.*

Advantages to the military? Consider these six:

1. **Preservation without refrigeration.**

2. **Weight reduction**—dehydrated products average only one-third the weight of the original foods.

3. **Acceptability**—Taste of freeze-dried items (after rehydration) generally is comparable to that of the fresh product. This is particularly important with meats.

4. **Appearance**—undesirable color changes are minimized.

5. **Handling economy**—packaged in flexible film, freeze-dried products enable considerably better space utilization.

6. **Operational efficiency**—preparation and service in the field require a minimum of equipment and no specially trained personnel.

Product preparation for freeze-drying is similar to that employed in quick-freezing. Subsequently, the item must be frozen solid because incomplete freezing causes foaming, which cuts the drying speed and damages the product.

Drying takes place by evaporation or, more precisely, by sublimation of water from the ice phase. This generally proceeds from all exposed surfaces toward the center. In a microscopic sense, the initial frozen item is already dehydrated, since water has already separated as pure ice dispersed in a matrix of otherwise dry tissue.

Freezing under high vacuum is the key to most of the technique's advantages.

Rigidly frozen material does not shrink. Moisture is lost from the outer surface, leaving a cork-like porous product with hollow spaces. And it's this porosity that greatly speeds rehydration.

Evaporation from the frozen state curbs migration of dissolved solids. Since drying takes place at low temperature, bacterial growth, enzyme activity, and adverse chemical changes are minimized. As a result, damage to color, flavor, and texture are minor.

These factors are vital to proper product rehydration for field use. Reentry of water is facilitated by the porous structure and normal distribution of soluble solids.

In conventional dehydration, moisture evaporates from surfaces which are kept wet by migration from the interior. This movement of tissue fluid causes case hardening as moisture evaporates. In addition, there is shrinkage not always completely reversed by rehydration.

Our lead illustration shows that freeze-dried products have better

* For a review of Army quick-serve meals, see FE Feb., '57, p. 64.

**R. G. TISCHER and M. C. BROCKMANN**

Quartermaster Food & Container Institute for the Armed Forces, Chicago

# Of QM Quick-Serve Rations

appearance than those produced by conventional air-drying.

Our table (right) presents major differences between the two procedures, differences in drying mechanisms and in the dry and rehydrated products. These statements are generalizations to which exceptions are not uncommon. And the table is not applicable to fluid products such as milk, which can be processed in a spray dryer.

As shown in the table, freeze-drying is substantially more expensive than conventional procedures. Equipment is costly, especially in terms of product processed per day. Mechanical or jet-vacuum units and refrigerated condensers are required. At 1 mm. Hg (which is within the expected operating range), it is necessary to handle 17,000 cu. ft. of vapor in evaporating 1 lb. of water.

Finally, the batch-type ovens used are loaded and unloaded manually. This adds materially to labor costs.

Fig. 1 portrays one of the many problems associated with freeze-drying—time required to process one oven load. Note that during the first 12 hr., moisture falls from an initial 76% to about 14%, temperature remaining below freezing.

In the next 12 hr., only about 12% of the original water is removed. During this period, temperature gradually approaches that of the oven shelves. Time required to reduce residual moisture from 14% to 2% adds substantially to overall costs.

## Cost Comparisons

Since the Armed Forces must bear the cost of delivering food to the ultimate consumer—wherever he may be—an expenditure of 16-24¢ for removal of a pound of water can often be justified on economic grounds alone.

This is illustrated by Fig. 2, which summarizes cumulative processing and transportation costs for 1,000 servings of a canned or freeze-dehydrated meat shipped from Chicago to a Pacific island. Transport includes railway, boat, plane, and delivery by air drop.

Meat is assumed to be in No. 10 tins, packed 6 to a case. A loaded case weighs about 48 lb., has a vol-

## How It Differs From Conventional Dehydration

| Process Variables | Conventional Drying | Freeze Drying |
|---|---|---|
| 1. Applications to various types of products | Quick-drying foods such as seeds, certain fruits and vegetables. Animal products generally unsatisfactory | Most foods, but recommended for those not dried satisfactorily by conventional processes. Applicable to cooked and raw animal products |
| 2. Pre-treatment | Removal of inedible portions, reduction to suitable pieces | Removal of inedible portions reduction to suitable thickness, freezing |
| 3. Operation | Batch or continuous | Batch |
| 4. Temperature | 100–200 F. | Sufficiently low to prevent thawing |
| 5. Pressure | Atmospheric | Below 4mm. Hg |
| 6. Time | Usually less than 12 hr. | 16-24 hr. |
| 7. Humidity | Atmospheric or somewhat above | Near 100%. |
| 8. Air velocity | Moderate to rapid | None (theoretically) |
| 9. Heat to product | From air by convection | From heated plate by conduction and radiation |
| 10. Moisture loss | By evaporation from near the surface | By sublimation from boundary of ever receding ice-crystal zone |
| 11. Internal fluid transfer | Migration of water and dissolved solids to surface | Water and soluble materials immobilized |
| 12. Probability of chemical, enzymic, or microbial action during drying | Moderate to good | Remote |
| 13. Dimensional changes | Marked shrinkage | None |
| 14. Costs: Equipment | Low to moderate | High |
| Utilities | Low | High |
| Labor | Low to moderate | High |
| 15. Estimated cost per lb. water removed | 2–7c. | 16–24c. |
| 16. Industrial capability | High | Low |
| **Dried Product** | | |
| 1. Structure | Solid | Porous |
| 2. Density | Higher than original | Lower than original |
| 3. Friability | Low | Marked |
| 4. Color | Darker | Little change |
| 5. Odor | Usually changed | Normal |
| 6. Storage stability | Good, tendency to browning and rancidity | Excellent if dried to 2% or less moisture, and protected against water vapor and oxygen |
| 7. Rehydration | Slow, often incomplete | Rapid, usually nearly complete |
| **Reconstituted Product** | | |
| 1. Color | Darker | Normal |
| 2. Odor | Frequently abnormal | Normal |
| 3. Flavor | Frequently abnormal | Normal |
| 4. Texture | Tough-dry | Tough-normal |
| 5. Protein denaturation | Extensive | Little in uncooked products |
| 6. Military acceptability | Poor–good | Generally good |

ume 1.1 cu. ft., and contains 36 lb. of meat which, for convenience, is assumed to represent 36 servings. Then, 1,000 servings would weigh 1,333 lb. (gross) and occupy 30.6 cu. ft.

Since freeze-drying does not produce shrinkage, a serving of freeze-dried meat has the same volume as one of canned meat. However, it weighs only one-third as much. For calculation purposes, freeze-dried meat is assumed to be gas-packed in an "impermeable" plastic bag, which is also held in a 1.1-cu. ft. case.

In this package, dry meat occupies the entire case—including the 22% "empty" volume when a carton is packed with cans.

This more efficient packing requires only 23.9 cu. ft. per 1,000 servings of freeze-dried meat. Moreover, elimination of cans cuts the weight by about 4.5 lb. Totaling the weight of the dry meat, plastic bag ($\frac{1}{2}$-$\frac{3}{4}$ lb.) and container, 1,000 servings of freeze-dried product average only 522 lb.

In Fig. 2, values do not include raw-material cost. Rail transport is based on a car-lot rate of $3.85 per 100 lb. between Chicago and San Francisco. Boat charges are calculated at $0.465 per cu. ft. between San Francisco and Hawaii. This includes a stevedore charge of $0.20 for loading and unloading.

Note that the cost of water transport is based on bulk, not weight. Since freeze-drying does not cut volume significantly, the only advantage is better space utilization. Air transport is calculated at $13.12 per 100 lb. per 1,000 miles.

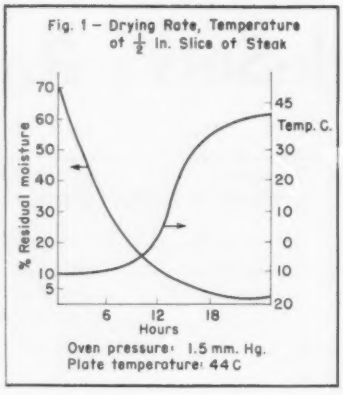


Fig. 1 — Drying Rate, Temperature of ½ In. Slice of Steak
% Residual moisture
Temp. C.
Hours
Oven pressure: 1.5 mm. Hg.
Plate temperature: 44 C

**BIG PROBLEM** is excessive drying time, as shown by this residual-moisture curve.

The break-even point for freeze-drying, as opposed to canning, falls about 200 miles before the supply target. It also provides an insight into the economics of delivering supplies by air drop, which is said to cost 28¢ per pound.

Here, the weight difference between canned and dehydrated products has a marked impact on cost of bringing the load to earth with a parachute. Since freeze-dried products are light and non-fluid, free-fall air drop might be substituted for the parachute. This would favor the dehydrated product.

Superimposed on Fig. 2 is an additional graph showing the economic significance of acceptability. The dotted line shows the cost of processing and delivering 1,000 servings when 20% are rejected, a rate normally expected with canned meats. In this case, 1,250 servings would have to be purchased, processed, and delivered in order to have 1,000 consumed.

Charges for additional weight and bulk would be extended throughout the transport system. As noted, air transport and air drop are highly sensitive to this increased weight, while movement by water is relatively insensitive to moderate differences in weight or bulk.

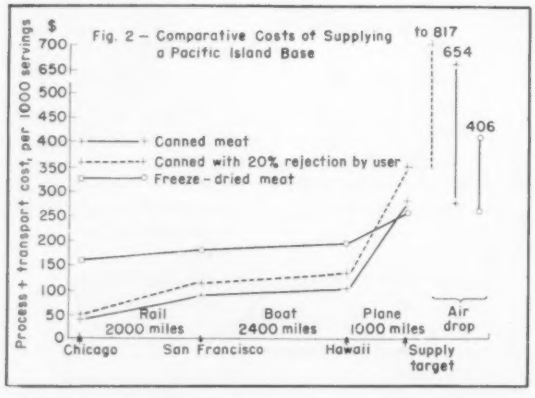
Fig. 3 emphasizes the cost differences of the various types of transport. Being a generalization, it is subject to rather wide variation.

On the basis of values here summarized, cost of freeze-dehydration is quickly recovered by savings in air transport. In rail shipment, weight reduction incident to freeze-drying cannot be expected to return more than one-half the cost of freeze-drying. And transport by boat is relatively insensitive to this weight reduction.

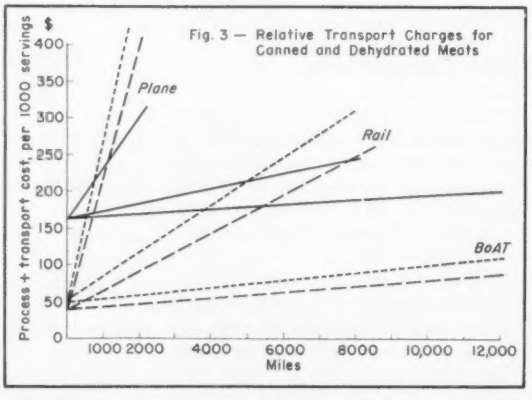
## Needs for Progress

The unique advantages of freeze-dried products for military feeding have limited counterparts in the civilian market, where freeze-dried items must compete against fresh and quick-frozen products.

## How Freeze-Drying Cuts Cost of Long-Distance Military Transport




**LOGISTIC CHARTS** tell the story. Left: Extra cost of freeze-drying is quickly recovered when air-transport enters supply picture. Here, break-even point in combined rail-boat-air operations is about 200 miles from supply target. Right: Sharp rise in costs for canned goods (long dash) sent by air




emphasizes importance of weight reduction effected by dehydration (solid line). In contrast, this factor returns only half processing cost in rail shipments, and none at all when products go by boat. Short-dash line shows costs for 20% rejection of canned goods.

In addition, the relatively high cost of freeze-drying has not been conducive to a broad use of the process. Limited production capacity is reflected in the current problem of procuring material for experimentation.

There are several obvious, but artificial, ways to encourage an increase in freeze-drying facilities. Expansion based on sound economic principles should follow either an enlarged civilian demand for freeze-dried products, or a significant reduction in processing cost. Progress in the latter area would require an engineering "break-through", such as cutting about 12 hr. from the drying time or development of an efficient continuous system.

The army has recently introduced quick-serve meals in a feeding system designed to keep ahead of military needs during atomic warfare, whatever form this may take. In this system, great dependence is placed on use of freeze-dried meats.

In any kind of warfare, the soldier's combat effectiveness depends on how he feels and this, in turn, is largely influenced by how he is fed and reacts to his food. If quick-serve meals are to become a reality, scientific advances in the laboratory must be quickly accompanied by efficient use of the industrial capacity to solve production and supply problems.

If the vast resources of the food industry, its research scientists, laboratories, and pilot plants were engaged in developing less-expensive methods of producing freeze-dried products or their equivalent, quick-serve meals would be available both to military forces and to civil-defense operations in a relatively short time. —*End*

**"I don't know, Benny—you really think the public is ready for it yet?"**

**PROPER HANDLING** of breading materials minimizes bacterial counts in frozen seafood. Operator (foreground) checks fish sticks passing through batter unit on way to revolving breading machine.

# Do Breadings Cause Spoilage?

## Not if they're applied under sanitary conditions, as shown by latest tests on pre-cooked frozen seafood

CAN BREADINGS, *per se*, be a major source of microbial contamination in pre-cooked frozen seafood?

**Our research at U. of Maryland indicates an emphatic "No"—provided strict sanitary supervision is maintained on a plant-wide basis.**

To establish this, we conducted bacteriological tests on various breadings obtained from three sources: (1) Manufacturers, (2) retail outlets, and (3) seafood processors (breadings in use). Samples were examined for number and type of contaminating microflora.

Counts for manufacturers' products ranged from 360 bacteria per g. for a bread-crumb item to 4,500 per g. for a breading. Retail samples were also uniformly low in bacteria, the highest containing 1,500 per g.

However, processors' breadings had much higher bacteria, mold, and yeast counts than either of the above. In-use samples were taken from open receptacles along the processing lines, which were manually operated in some cases. Since fecal coliform were found in six of seven such samples, contamination apparently was caused by dubious sanitary practices, rather than by the breading itself.

The aspergenic (pink and orange) yeasts we found were probably the ubiquitous *Rhodotorula*. Molds were predominantly *Aspergillus* and *Penicillium*. Although these organisms may have sanitation significance, they have little importance from the vital public-health standpoint. The greater number of molds found in processors' samples reflects the processing plants' normally high humidity, which fosters mold growth.

Coliform count, on the other hand, has a greater bearing on sanitary and health aspects.

Relatively low counts were found in crumb items, which may be due to the difference between total nutrients in plain crumb, and batters and breadings. Crumbs have no additives, whereas breadings and batters contain such ingredients as egg, milk solids, malt extract, and leavening.

Moreover, moisture content of crumb is about 4%, while that of combined batter and breading ranges 9-11%. Finally, pH of crumbs is 5.3-5.6, as against 6.1-6.5 for batter.

All three factors—added nutrients, higher moisture content, and the greater hydrogen-ion activity—would tend to promote bacterial growth.

**M. A. BENARDE**

Assistant Professor, University of Maryland, Crisfield

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YOU PAY NO MORE for the extra quality you see in every part of a Jenkins Outside Screw & Yoke U-Bolt Gate valve. Yet longer life and reduced maintenance is bound to result from the extra ruggedness, the precision manufacture and unique design features which Jenkins puts into these popular, general utility valves.

Choose the Outside Screw & Yoke pattern for services where spindle threads must be kept out of the destructive effects of fluids in the line; where spindle threads must be cleaned and lubricated regularly or where a rising spindle is needed to indicate wedge position.

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GET FOLDER NO. 207 which describes Inside Screw and O.S. & Y. patterns . . . Iron Body with Bronze or Stainless Steel Mounting . . . All-Iron and Ni-Resist with type 316 Stainless Steel trim. Ask your local Jenkins Distributor or write Jenkins Bros., 100 Park Avenue, New York 17.

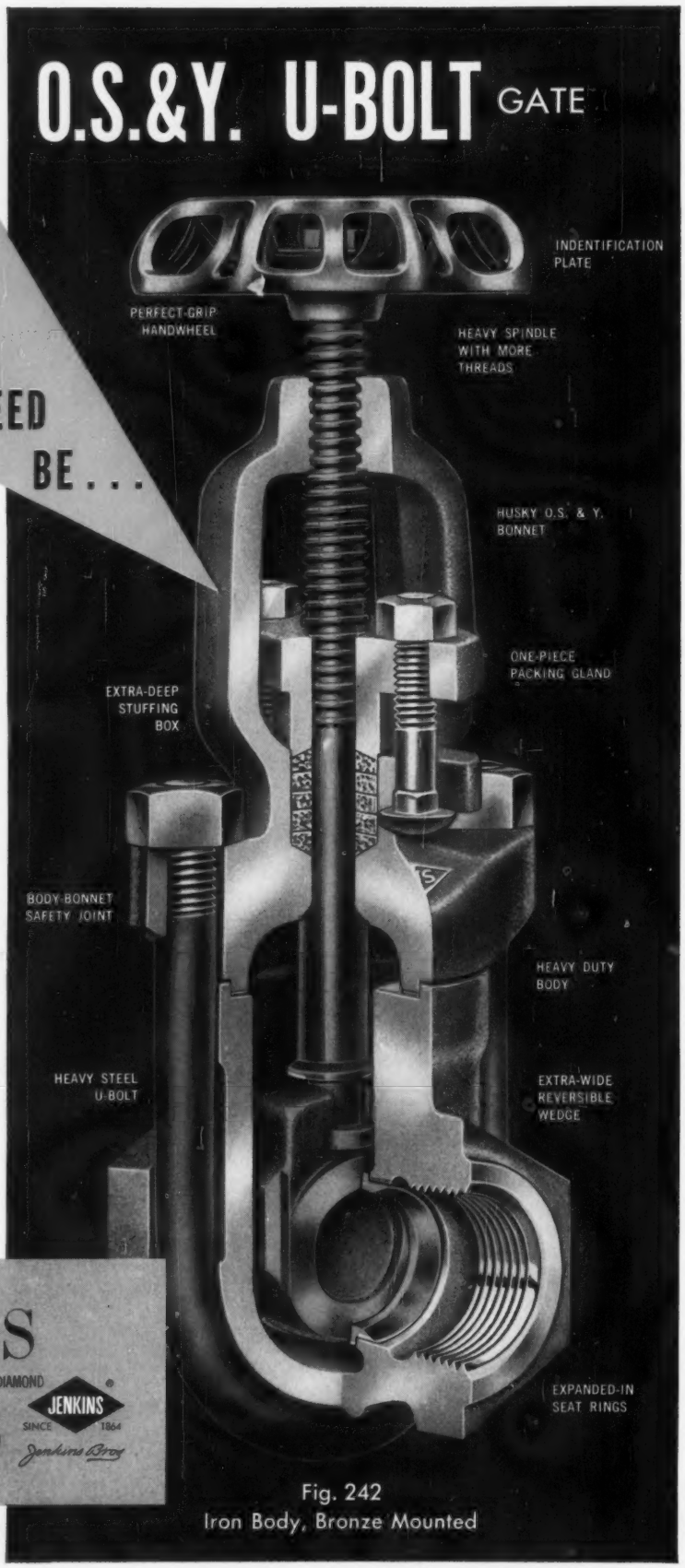


Fig. 242
Iron Body, Bronze Mounted

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VALVES
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Sold Through Leading Distributors Everywhere

# Aeration Curbs Waste-Disposal Odors

**. . . by permitting aerobic bacteria to oxidize organic matter to odorless end products. Otherwise, anaerobic organisms take over and produce foul-smelling gases . . . Tomato-waste disposal methods detailed**

ANY PRACTICE that maintains dissolved oxygen in decomposing organic wastes promotes odorless stabilization. This has been shown by organoleptic and physical tests on lagooned tomato wastes.

**In every case, those decomposed aerobically were completely stabilized without evolution of foul odor, while odors from untreated wastes were always rated as extremely obnoxious.**

Algae aid aeration during fermentation by releasing oxygen as a by-product of metabolism. Addition of oxygen-containing compounds (sodium and ammonium nitrates) maintains aerobic conditions, but cost often precludes their use in adequate quantities.

**Tomato wastes with up to 1,100 ppm. B.O.D. may be successfully decomposed in shallow lagoons with large surface area, odors being controlled by a suitable masking agent. However, wastes containing over 3,600 ppm. B.O.D. should not be lagooned since odor control is too costly.**

## How Odor Is Gaged

Plate counts on untreated tomato waste show that anaerobic organisms increase rapidly by the third day of fermentation (Fig. 1.), while aerobes reach a considerably lower maximum concentration. However, aerobic activity is greatly stimulated when a typical 9-l. sample is aerated at 0.5l. of air per min.

Numbers of aerobic and anaerobic organisms are also related to microequivalents of reducing gas produced by a waste. One method of measuring these concentrations employs a unit appropriately called the Stinkometer. A value of 5 or less indicates a practically odorless waste; 6 to 12, slight but increasing odor; and over 17, obnoxious odor from the refuse.

Fig. 2 shows the sharp increase in gas concentration from an untreated tomato waste as fermentation progresses, and the gradual decrease as natural stabilization occurs. Note that maximum gas concentration is appreciably lower when the sample is aerated, and drops rapidly to zero after the third day.

## Other Disposal Methods

An early attempt to stabilize cannery wastes consisted of screening out and precipitating the insoluble solids chemically. Doses of 4 lb. of lime and 1 lb. of aluminum sulphate per 1,000 gal. reduced suspended solids by 80% and B.O.D. by 70%. However, excess soluble organic matter in the waste water generally precluded its disposal into streams without further treatment.

A clear, colorless effluent with B.O.D. reduced 65% was obtained by triple recirculation of tomato waste through a trickle filter (458 gal. per sq. ft. per day). Such biological equipment, though, has the disadvantage of high initial cost.

Seven-day detention of tomato waste at 97F. in an aerobic digester cuts the B.O.D. 72%, but the effluent is still unsatisfactory because of strong odor, black color, and B.O.D. of 200-250 ppm.

Animal feeds have been made from tomato wastes with over 3% total organic matter. They are comparable in value to wheat middlings but, when sold at the same price, do not return the cost of production.

Spray irrigation (FE Nov. '57, p. 112) solves the problem in some cases. If the soil is highly permeable and wooded areas are available, wastes containing solids passing a 4-mesh screen can be applied at the rate of 1 acre-in. (about 28,000 gal.) per day. This may be continued for several days without moving spray nozzles.

Plowed fields with or without soil conditioners are not suitable media. Cover crops are essential.

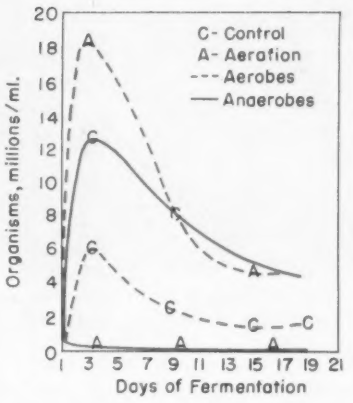



Fig. 1. **PLATE COUNTS** on tomato wastes fermented with and without aeration show relative growth of aerobic and anerobic organisms. The former produce odorless end products, and the latter, foul gases.

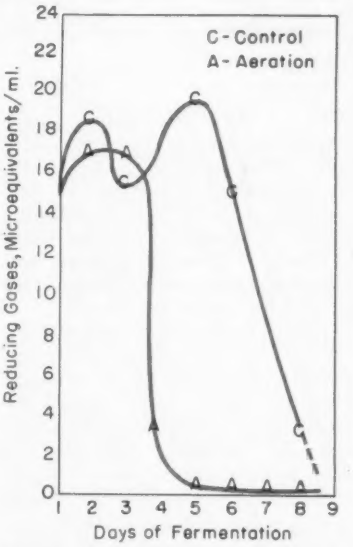
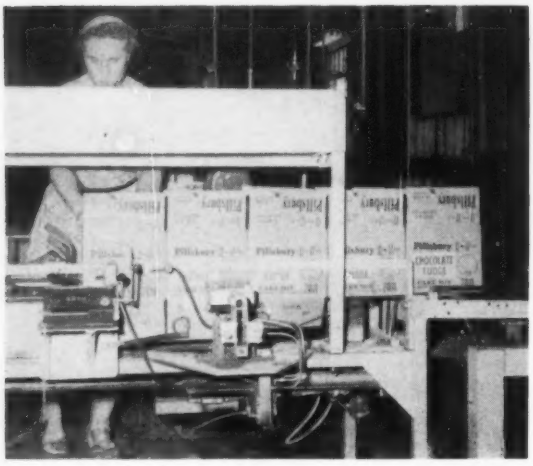



Fig. 2. **CONCENTRATION** of reducing gases from decomposing tomato wastes correlates with degree of objectionable odor. Waste with less than 5 microequivalents per ml. is almost odorless, while a value of over 17 indicates obnoxious odor.

**G. R. AMMERMAN and N. W. DESROSIER**

Department of Horticulture, Purdue University, Lafayette, Ind.

## 4 Steps to Sampling and Quality Testing



CASE PACKER is set to eject three samples of each batch on accumulating track for hourly collection.

CODED SAMPLES are stored in these racks adjacent to laboratory. Racks hold a week's production.

# Pillsbury's Code Sampling Gives

**New system pinpoints sub-standard lots, reduces rejects, saves time. Key in routine is semi-automatic case packer fitted to count out and eject identified samples**

HERE'S A SURE-FIRE product-quality checking system—featuring a method that saves on costs and improves spotting of sub-par case lots.

**It cuts down (1) sample-collecting time, (2) number of rejected cases, (3) costs of discarded packages and attendant labor, and (4) storage space needed for assembling samples.**

In this system, developed at Pillsbury Mills' Springfield, Ill., plant, coded sample cartons (of prepared cake mixes and similar goods) discharge from the packaging lines onto specially designed semi-automatic case packers. These coded cartons, identified as a sampling of the preceding coded shipping cases of 12 or 24 cartons, are submitted for quality control bake tests.

The ejected cartons accumulate on an assembly track (a part of the case packer) to be gathered hourly for the quality control lab. Here, they're stored in sectionalized racks that hold a week's supply, ready for bake tests that follow the recipes printed on the packages.

**KEITH SCHERCH**

Director of Quality Control, Pillsbury Mills, Inc., Springfield, Ill.

### Sub-Par Lots Tagged

If performance tests don't match up to Pillsbury standards, the warehouse-palletized case lots identified with these coded samples are tagged and held from shipment. Meantime, the analytical lab checks further samples withdrawn from the warehouse lots.

Lab information is then passed on to the mixer operator directing him how to rework the batch and prevent recurrences. In rare instances, a batch may be disposed as animal feed.

Now for the details on the four ways Pillsbury has profited:

1. **Less time in collecting samples.** As noted, they're automatically accumulated on each packaging line, and this saves on the number of collecting trips to the plant.

This point is pertinent, for due to the great expanse of the large Springfield installation, trips to the lines entail long hikes.

2. **Rejections of cased goods reduced.** This is credited to the pinpointing of such goods through sequential sampling.

Mixing of ingredients is carried out batch-wise, while packaging proceeds continuously, with no sharp indication on the filling lines as to when one batch ends and another begins.

The reject pinpointing is carried out by collecting (from ejection track of case packer)—three sample cartons—say from the 25th, 50th, and 75th case—of each batch.* Then the first sample (from the 25th case) is bake-tested. If this sample, along with the first samples of preceding and subsequent batches, meets the standards, then the first and second batches are OK'd for shipment.

Attention then goes to the next

* When batches are of greater poundage, the three samplings can be taken from, say, the 40th, 80th, and 120th case.

**AFTER PACKAGES** and products are checked, batter is prepared and baked, according to recipe.

**BAKED CAKES** are examined. If off-standard, batch is checked by lab and held from shipment.

# 'Can't-Miss' Quality Control

pair of batches—the third and fourth —with the third meanwhile held up awaiting outcome of the bake test on the first sample of the fourth batch.

Where standards aren't met in a baking test, re-bakes are made on samples representing the 25th case on each side of the off-quality goods. One of these samples, accordingly, would be representative of the 75th case in the first (preceding) batch, while the other sample would be representative of the 50th case of the second batch.

## Rejects Cut Down

This way, cases to be rejected are pinpointed and pulled out of stock.

**Rejections in the new method total less than 100 cases as against 1,000 by the old routine.**

Samples of rejected cases are checked by the analytical lab relative to major ingredients (flour, leavening, shortening, etc.). Where the proportions are "off," the product in question is re-worked by the mixer operator.

Having three samples from each batch, the lab need not send to the warehouse for more sample stock when mixing or baking errors occur in the tests.

Formerly, just a single carton was sampled to represent a batch, and there was no precise method of narrowing down a rejection. When goods was shown to be "off," other coded samples from this batch had to be drawn from the warehouse.

## Direct, Indirect Costs Shaved

Even then, these samples were not representative of the start or tail-end of the batch, and rejections were made on a more or less arbitrary basis. What's more, a larger number of samples had to be collected.

**3. Reclamation costs cut.** With fewer cases now removed from the warehouse, there is less breaking up and disposal of packages and less collection, re-processing, and re-packaging of their contents. The new sequential-sampling technique reduces both direct labor costs (packaging, handling in and out of warehouse, breaking up packages, and reworking product for re-packaging), and indirect costs (packaging materials).

**4. No need for storage facilities ahead of filling machines.** Sampling for "bake-offs" of each batch at point of manufacture would be too costly, from the standpoint of the holding tanks and floor space required.

Also surge capacity ahead of packaging lines is prohibitive because of space limitations and physical layout of the plant.

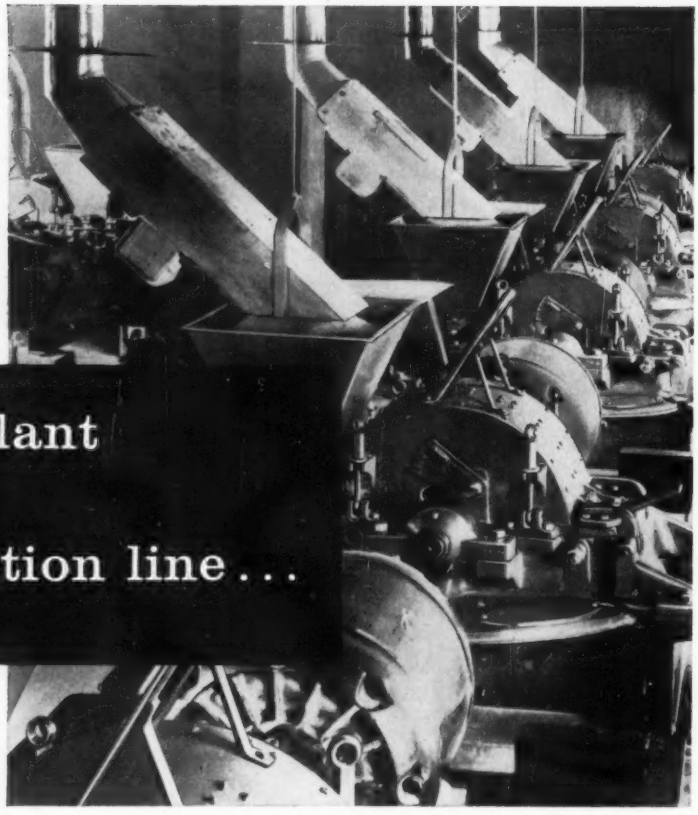
Quality control is not limited to bake tests. For one thing, the mixer operator spotchecks each batch before it is discharged to a packaging line. He runs pH checks and simple batter-frying tests.

Then, before a sample is submitted to bake tests, packages are checked for proper liner and carton sealing, codes, and net weights. Product is also examined for color, appearance, and possible contamination with extraneous matter.

## How System Works

Heart of the sequential-sampling routine is the semi-automatic case packer (Thiele Engineering Co.) installed on the tail-end of each packaging line (Pneumatic). There is a battery of these lines.

Cartons are fed single file from top sealer to combination top-and-bottom feed belts, then discharged,



A Battery of No. 4TH Mikro-Pulverizers . . . 50 hp. motors . . . capacities to 25,000 lbs. per hour.

## pilot plant to production line . . .

The Bantam Pulverizer — a complete miniature grinding mill with ¾ or 1 hp. motor. Bulletin #51A

# There's A MIKRO-PULVERIZER For Every Grinding Job!

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face-to-face, in a row of six above a horizontal carton-assembly plate. And the cycle repeats in accordance with the number of cartons (12 or 24) to be packed into shipping cases.

The operator slips a manually set-up shipping case over assembled 12 or 24 cartons, then slides it onto the case-assembly plate. The carton now strikes a lever that allows a package ram to recycle and accumulate two or four rows of 12 or 24 cartons on the plate.

A pneumatically operated ram transfers the case from the plate. And a counter is activated simultaneously with the ram. Then, at the ram's end stroke, a guide-rail-mounted sequential coder imprints the package-line number and sequentially codes (in 5 digits). Cases then proceed to the automatic case gluer-sealer.

Ejection of cartons for sampling in sequential manner is carried out this way:

As the package ram moves a row of six cartons forward along the assembly plate, a trailing arm trips a lever on a counter that's been pre-set for every 25th or 40th case.

Short horizontal pistons, mounted on the side rail, are activated on return stroke of package ram and eject the first incoming carton onto a sample-accumulating track.

A vertically mounted sequential coder imprints the ejected sample carton with same code number that goes on the case, in order to identify carton with case. The carton coder cycles simultaneously with the case coder. —*End*

**"Salt? Well, in my gumbo I add an extra pinch—500 pounds."**



# Vapor-Proofs Freezer Unit With Low-Cost Sheeting

**Top-effective moisture barrier achieved with film that combines aluminum and Mylar. Technique provides a continuous, unbroken, protective "envelope"**

WHEN YOUR freezer walls aren't properly sealed, real trouble is invited—in the form of ice.

Here's why: Permeable walls tend to be penetrated by moisture vapor, which then freezes in the insulation. As a consequence, the wall may ultimately ice solid.

Today, however, advanced structural techniques are curbing this freezer-wall hazard. A pertinent illustration is the vapor-proofing achieved in the new 500,000-cu. ft. low-temperature (—10 to —50F.) warehouse erected by Sanger Ice & Cold Storage Co., Sanger, Calif.

Employed in this structure is a new sheeting (Alumiseal Zero Perm) that gives top performance in barring inroads of vapor. It comprises a 1-mil-thick aluminum film laminated between two ½-mil films of Mylar polyester.

These sheets are attached to the inner walls with a spot adhesive. Next, they are bonded together with a 1½-in.-wide pressure-sensitive tape (Zero Perm), thus providing, in effect, a single vapor-barrier "envelope" sealing the entire room.

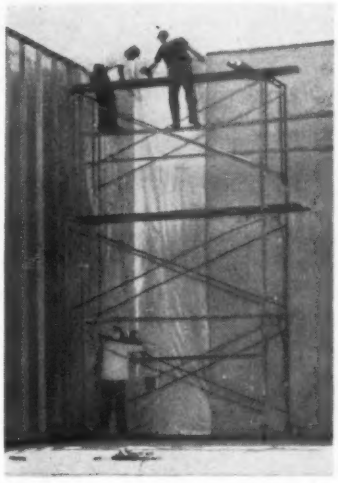
**The completed building, including refrigerator doors and lighting, is reported to have cost but $4.35 per sq. ft.**

Further structural details: After Sanger's vapor-barrier was in place, a ledger was fastened with a studgun at midheight of the wall. Caulking compound was then applied to prevent leakage points at the fastenings.

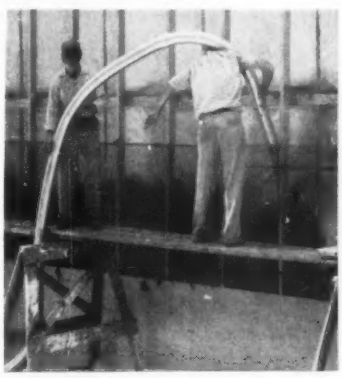
Next, the 2x4-in. wall studs were attached to the ledger by a 12-in. spacer, and the top plate of the stud wall was secured to the roof trusses. These trusses rest on posts independent of the tilt-up walls. This method permitted installation of unbroken, continuous vapor-seal and insulation at the wall and roof juncture.

Palco Wool—redwood bark fiber—was then blown, behind temporary retainers, into the 12-in. fill space. And it was subsequently hand-packed to a density of 4½ lb. per cu. ft. to avoid pockets or settlement.

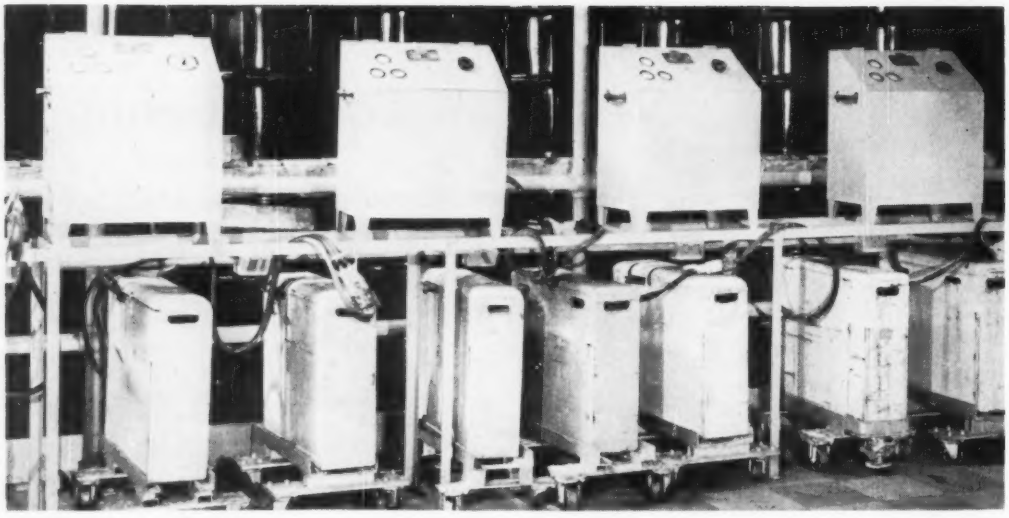
Wall conductance of this structure is reported as .0233 Btu. —*End*



**STRIPS** of the impermeable material are quickly hung, floor to ceiling, with a spot adhesive. Then each sheet is tightly edge-sealed to the next with a special permanent tape.



**REDWOOD** bark fiber is blown into space between barrier and temporary retainers (foreground). Plywood sheets form interior walls.



SPECIAL RIG speeds charging—with heavy batteries handily wheeled on caster carrier into position under rectifiers.

# They Give Their Batteries "9 Lives"

**Nabisco's special care of truck and lifter units prevents emergencies during handling peaks . . . Time and costs saved, too**

SAFEGUARDING your in-plant truck and lifter power is vital—especially to meet the rugged demands of peak periods, when materials handling must be stepped up to the fastest "beat" and any delay can spell disaster.

And what it takes is the kind of efficient battery care and maintenance that's now been made routine at the Pittsburgh bakery of National Biscuit Co.

This plant must keep its 23 battery-powered trucks on the job for 2- and 3-shift stretches. The vehicles transport pallets of salt, flour and other ingredients over fully 10 miles of aisles.

To make sure they'll "keep rolling," Nabisco has instituted this practical 3-point program of battery care:

**▶1. Reserve batteries—nine extra 6-cell units for floor trucks and two of 16-cells for power lifters—are kept fully charged. This insures adequate time for routine cleaning and maintenance of working units.**

**▶2. Charging is sped in an orderly, well-engineered, specially-equipped room. Whenever feasible, batteries are left in the trucks for this operation, saving time and trouble.**

**▶3 An equalizing charge is administered periodically to restore all cells in each battery to a fully-charged condition.**

## 2-Step Charging Routine

Smaller batteries are charged by 14 rectifier units. These are mounted high on angle-iron stands (photo) so that batteries can be readily rolled underneath for charging.

The D. C. suppliers employ the "two rate" method of charge. That is, batteries are first served at a high rate until they are about 80% charged. Then a relay snaps a resistor into the circuit, and the charging is completed after 3 hr. at a low finishing rate (about 5 amp. per 100 amp.-hr. capacity of the battery).

Larger batteries are kept at peak condition with a double-circuit motor-generator set. This unit automatically stops the charge when full voltage is reached.

When equalizing charges, the recommendations of Gould-National Batteries' field engineers are followed. More to the point, the finishing rate is continued until the specific gravity of all cells stops increasing (3 to 4 hr.).

Numbered metal plaques on each battery simplify the record-keeping task. And signal lights on charger panels directly indicate whether or not a battery is on charge.

Whenever periodic washing, equalizing, or special maintenance requires that batteries be removed from the trucks, a 2-ton hoist and spreader bar are employed. The hoist is readily brought into use, being conveniently mounted on a centrally-located monorail.

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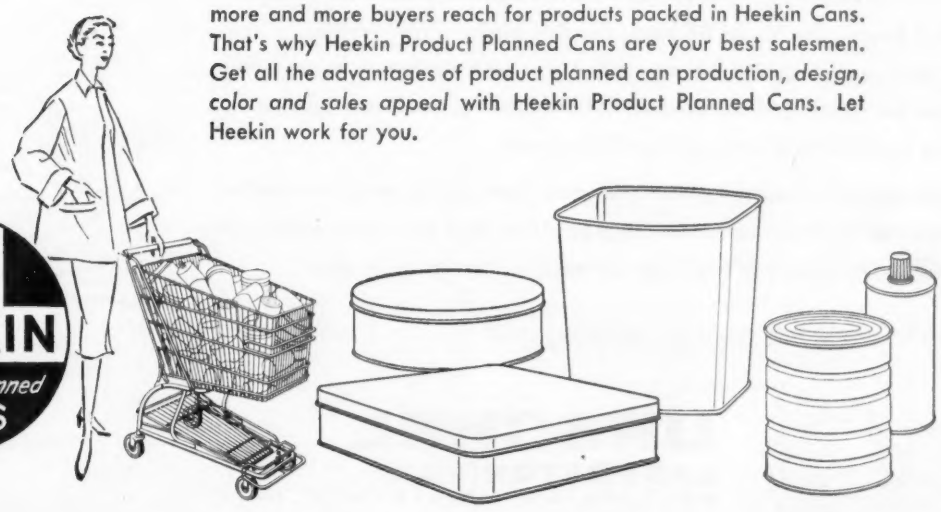


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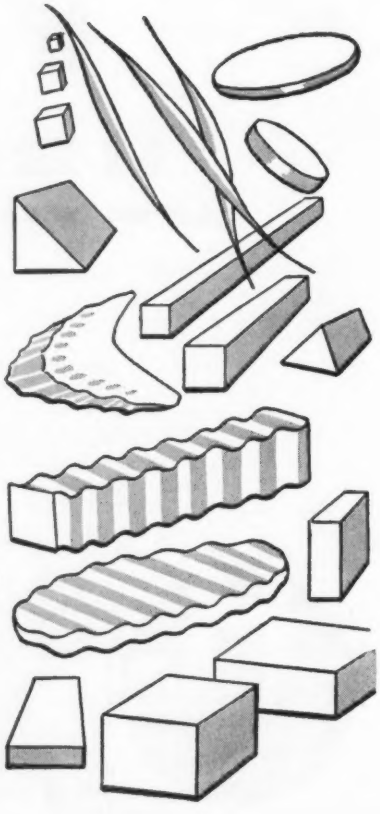

• We don't know what the foods of the future will be like—but we do know that today's housewife is constantly searching for the new and excitingly different in food cuts with which to tempt her family's jaded appetites.

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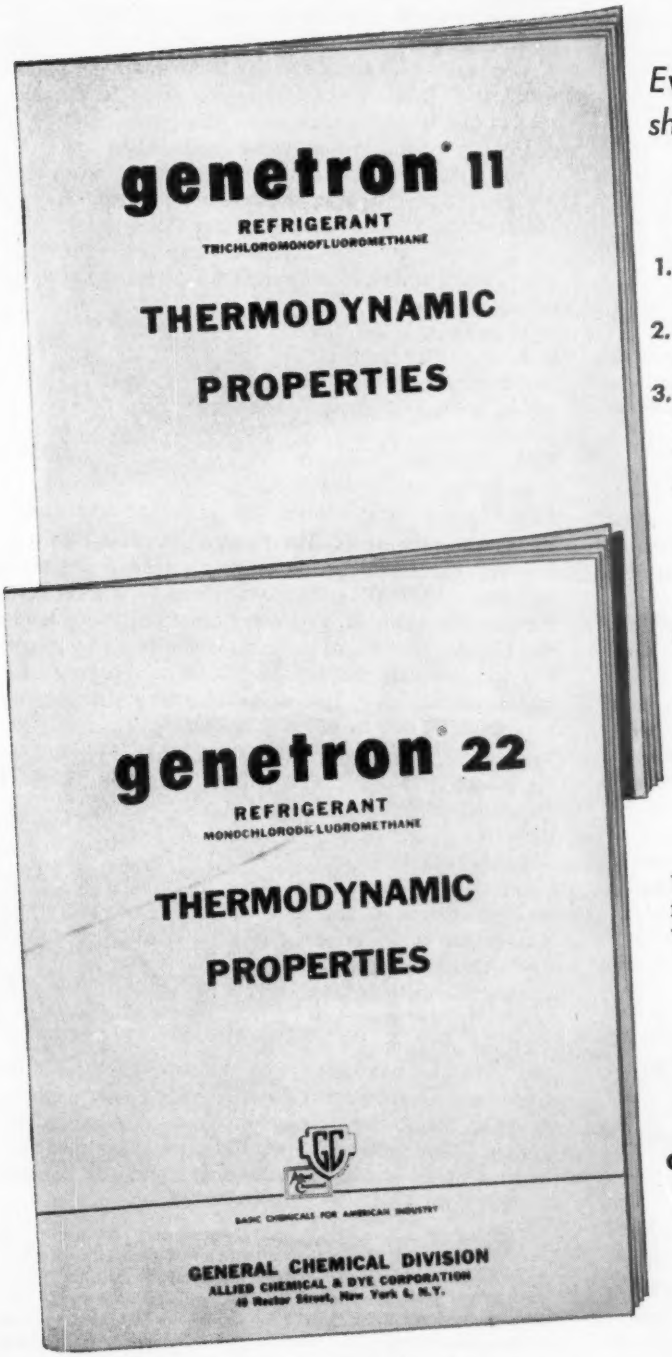


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INSIDE SCIENCE

# The Vital Story of VITAMIN A

*by* Science Writer

**We live in a golden age of the sciences!**

In the science of nutrition discoveries of food elements and their action have resulted in the promise of better health for us all.

**Let's consider vitamin A as an example.**

**A Capsule History.** 1913 was the year. Two teams working independently with animal feeding experiments discovered that a diet which was good in all other respects but which varied only in the source of fat caused young animals to thrive or sicken as the fat was varied. The work of these teams (McCollum and Davis; Osborne and Mendel) led to the discovery of the food factor which we know as vitamin A.

**Composition and Action.** A pale yellow, oil-soluble substance, vitamin A is expressed in the chemist's shorthand as $C_{20}H_{29}OH$. It is necessary in the diets of men and animals to promote the body's growth and development. Vitamin A is a vital requirement in guarding the health of the eyes and skin, and for resistance against infection. It helps maintain the health of mucous membranes and other specialized epithelial and glandular tissues.

Vitamin A enters the body as a constituent of food. Or it may be created within the body when a precursor of vitamin A is eaten. A precursor is a food element with potential vitamin A *value* but no actual vitamin A *content*. For instance, many green leaves have a high vitamin A value but, paradoxically, contain no actual vitamin A. The body converts the precursor into the vitamin. The most common precursor of vitamin A is beta carotene, the natural yellow coloring of many foods, such as dairy products, cereal grains, carrots, alfalfa, etc.

When consumed in food vitamin A is absorbed primarily in the healthy intestine, is esterified in the intestine's walls and is carried as an ester in the lymph and blood to the body's storage depots. The liver, which has a large capacity for storage, contains about 90% of the vitamin A found in the body.

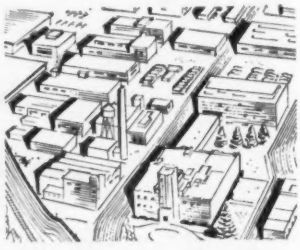
**Isolation and Synthesis.** It was not until 1937 that pure, crystalline vitamin A was isolated by Holmes and Corbett from fish-liver oil. Research in the synthesis of vitamin A was stimulated during the Second World War by the threat to natural sources in fish-liver oil. This work resulted in several processes to produce vitamin A synthetically. Of these, one of the most successful was evolved by the Roche research team headed by Dr. Otto Isler which was announced in 1947. Much of the vitamin A now used for pharmaceutical manufacturing and food fortification in the United States and many other countries of the world is produced by this process.

Vitamin A and beta carotene produced by the Hoffmann-La Roche synthesis have many positive advantages for food and pharmaceutical manufacturers. Among these are the complete absence of any "fishy" odor, taste, or after-taste; the reasonable and stable price; their stability, purity and uniformity and the assurance of a steady economical supply.

Vitamin A is described in the U. S. Pharmacopoeia as a fully acceptable compound for use in pharmaceutical products. The U. S. Food and Drug Administration has approved its use for the fortification of margarine and other foods.

**Human Requirements.** The Food & Nutrition Board of the National Research Council recommends that a daily allowance of 5000 International Units of vitamin A in the diet will maintain good nutrition of healthy adults in the U.S.A. The Board's recommendations vary above this for pregnant and lactating women, and below for infants and children. The adult dose used in therapy may vary from 50,000 to 200,000 units daily.

**Production.** At the huge Roche Park plant of Hoffmann-La Roche in Nutley, New Jersey, over 500 pieces of large-scale chemical engineering equipment are working constantly to produce the superior Roche• vitamin A. This production is so large that Roche vitamin A comes from the plant actually by the tons. In fact, the entire needs of the food and pharmaceutical industries of the United States and Canada can be met from this one plant.



Again the Roche people, who have so often led the way in vitamin research and production, have made another contribution to the better health and well-being of countless millions.

This article is one of a series giving a brief resume of our present knowledge of those essential health factors—the vitamins. Reprints of this and other articles are available without charge. The Vital Story of Vitamin C was published previously and others are forthcoming. Send your request to: Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, N. J. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, P. Q.

• ROCHE—Reg. U. S. Pat. Off.

### Better Canned Foods With Rays and Heat

Effectiveness of mild heat treatments plus irradiation as a substitute for either process in the sterilization of canned food was demonstrated in experiments.

Ground beef in No. 1 picnic tins was inoculated with *Cl. botulinum* 213B spores and sterilized by irradiation-heat processing. With 5,000,000 spores per can, sterility was obtained in 0.6 min. at 250F. ($F_o$ value), following 1.0 megarep gamma radiation from Cobalt-60. For 300 spores per can the $F_o$ value was less than 0.2 with the same amount of radiation.

Without pre-irradiation the $F_o$ values were about 1.0 and 0.4 respectively. For sterilization by irradiation alone ($F_o = 0$) 3.4 to 3.9 megarep of gamma irradiation was required for 5,000,000 spores per can, 1.64 to 1.80 megarep for 300 spores. —*Applied Microbiology* 5(5), 292-95, 1957.

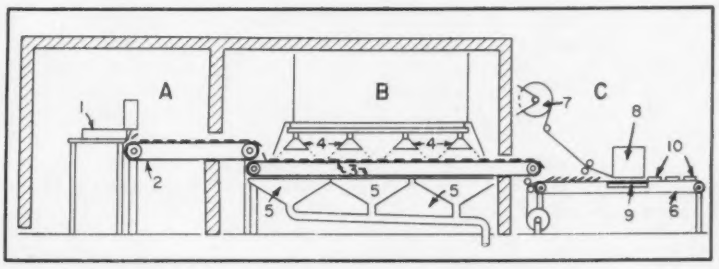
### Cacao Bean Fermentations

When freshly harvested, Forastero cacao beans contain purple pigments whose destruction is responsible for bleaching and flavor development.

The bleaching action is due to a glycosidase enzyme system which requires a temperature of 110-120F. and an acid reaction (pH 5 to 6). Furthermore, the beans must be "dead" before the enzyme and its substrate can make contact with each other.

When moisture and air balance in the mass is suitable, a vigorous microbial growth ensues and the beans are killed by the second day of fermentation, by which time temperature and pH are satisfactory for the enzyme reaction.

When their pulp is deficient in sugar, or when small quantities are fermented, beans may not be killed till late in the fermentation, and enzyme reaction will be limited or partly inhibited by polyphenol oxidase activity. These beans will retain the purple shade, and even if it is destroyed by oxidation during drying, the beans will not be highly flavored.—*J. Sc. of Food & Agr.*, 505-11, 8(9), 1957.




## Precooked Bacon Slices in Aluminum Foil

Crisp broiled or fried bacon strips in a package of aluminum foil of a size that can be dropped into an electric toaster for reheating is the basis of a recent patent.

To prepare the product, a slab of cured and smoked bacon, cut to half the usual 9-in. width (1 in drawing) is machine sliced (32 to lb.) in refrigerated room (A). Slices fall onto endless conveyor (2) which transports them through heat-insulating wall to "cooking" room (B).

Here they discharge onto wire mesh conveyor (3) that moves the strips beneath infrared lamps (4) mounted in hood of reflective material.

Speed of the conveyor is carefully controlled, as are distance of lamps from it, to insure desired crispness and color of the cooked strips. Heating intensity of the lamps is also controllable.

Hot fat from the bacon drains into troughs (5) and is piped to a vat for reclaiming or processing. Broiled strips are conveyed from "cooking" to packing room (C) where they are deposited on an aluminum foil ribbon traveling in synchronism with conveyor (6). A second strip of foil, fed from roll (7) covers the bacon which has been arranged similarly to packaged, sliced raw bacon, but in groups of 8 slices.

As foil and bacon pass between pressing and cutting dies (8 and 9), foil is sealed around periphery of bacon, then cut to form individual packages (10). US Patent 2,807,550, Sept. 24, 1957.

### Evaluating Biscuit Flours

To select flours of proper quality for cracker and biscuit manufacture, the specific recovery, and water tolerance tests have proved useful.

In the first a 15g. ball of dough, from 30g. flour-12g. water mixture, is pressed to a thickness of 3.5 mm. Flattened disk is then dried at 221F. During drying the dough contracts, and difference between maximum and final diameter is its specific recovery.

In the water tolerance test a similar dough ball is pressed between parallel plates under a weight of 700g. and diameter of mass is measured. When several doughs with differing water contents are measured, diameter-water content curve is a straight line, the reciprocal of whose slope is the water tolerance. Tests indicate that a good biscuit flour should have a specific recovery of less than 18 and a water tolerance of 50 or less.—*J. Sc. of Food & Agr.*, 541-47, 8(9), 1957.

### Coating for Sausage

A sausage coating that is substantially resistant to "salt rust" and other forms of deterioration is the subject of a patented process.

It is applied in two layers. The first is an aqueous solution of a gelatinous substance that serves as a filler for the irregular contour of the sausage. A typical composition is: Water, 65.4%; gelatin, 21.8; glycerine, 6.4; corn syrup, 5.0; gum arabic, 0.4; vinegar, 1.0. The second coating is a water-insoluble cellulose material in an organic solvent. Following gave excellent results: Ethyl cellulose, 11.0%; ethyl acetate, 73.7;

ethyl lactate, 12.7; and ester gum 2.6.

Completed coating is impervious to air and moisture, has a glistening appearance, and is flexible enough to prevent cracking or abrasion. It may be readily separated from the sausage prior to consumption.—US Patent 2,811,453, Oct. 29, 1957.

## Preserves Meat Color

A synergistic additive for incorporating in curing preparations that preserves color of cured meat is the object of a recent patent.

Additive comprises an edible salt of ascorbic acid and an edible phosphate salt selected from the group of tripolyphosphates, alkalinized metaphosphates, and mixtures thereof adjusted to a pH 8.5-9.5 with trisodium phosphate. Ratio of ascorbate to phosphate should be between 1:9 and 1:99 by weight.—US Patent 2,812,261, Nov. 5, 1957.

## Continuous Filtration Of Vegetable Oils

Filtration of vegetable oils to remove bleaching clays, or waxes formed during "winterizing", can be performed continuously with a vacuum type filter if the unit is enclosed in a pressure chamber so that pressure drop becomes 40-50 psi. instead of being limited to atmospheric pressure.

An Eimco vacuum filter, with an 18 in. dia. drum and a 12-in. face was mounted in a shell designed to withstand 55 psi. Optimum conditions included oil temperature of 170-175 F., ½-1½ in. of Dicalite 372 precoat, gas input rate, 6 cu. ft./min./sq. ft. of filter area at 180-200 F., and pressure drop of 20-40 psi.—*Ind. & Eng. Ch.*, 1863-70, Nov. 1957.

## Antioxidants For Lard

Phenol compounds with alkyl groups in the 2 position invariably show some antioxidant activity in lard and when these groups are in both the 2 and 6 positions the compounds show higher activity.

Results of recent studies suggested that factors other than mere steric hindrance must be considered in understanding antioxidant activity of alkyl phenols. So attention was turned to electrostatic activity.

It was found that antioxidant activity was shown by all phenols-containing electron-repelling groups in the 2 and 6 positions, but none by those containing electron-attracting groups in these positions. A free phenolic group was shown to be essential.

Spectral absorption studies after autoxidation showed no evidence for a dimer of the alkyl phenol. The dimer stilbene quinone, isolated from oxidized petroleum oil, disappeared rapidly when added to oxidizing lard.—*J. Amer. Oil Chemists' Soc.*, 404-7, Aug. 1957.

## Protein From Milk Waste

Conversion of high-lactose food wastes such as cheese whey, skim milk, corn steep liquor, cannery or citrus wastes, to high protein materials suitable for animal feeds is the object of a recent patent.

It is accomplished by an aerobic fermentation employing a lactose-assimilating organism to oxidize the lactose to $CO_2$ and increase protein content of the mix.

Fermentation is carried out at a pH of 3.5-7.5 and temperature of 80-100F. over a period of at least 5 days. Then mix is heated to release cells which are concentrated to 30% solids and spray dried.—US Patent 2,809,113, Oct. 8, 1957.

## Defatting Improves Malt

Removal of fat from malt, using ether or trichloroethylene, has no derogatory effect on the product.

Enzymatic properties of the malt were not effected, saccarification on mashing was completed, and filtration was satisfactory. The defatted meal was more easily moistened than normal malt, and the extract was about 2% greater. The brewer could, therefore, expect a greater extract yield per unit weight of malt.

The maltster obtains about 2 lb. of fat resembling cottonseed oil per 100 lb. of malt extracted. This should offset the loss of weight. Value of fat is greater than loss of weight in the malt.—*International-aal Tijdschrift voor Brouwerij en Mouterij* 17 (1), 19-21, 1957-58. (In Dutch)

## Beer Pasteurization's Role In Bottle Breakage

Pasteurization of beer is always accompanied by bottle breakage, a part of which is due to excessive pressures at pasteurization temperatures.

Factors affecting pressure are: coefficient of expansion of bottle glass and beer; temperature coefficient of $CO_2$ solubility in beer, and degree of bottle fill.

Volume coefficient of expansion of glass containers can be calculated from composition of the glass, or it can be measured experimentally. For experimental bottles a calculated coefficient of $26.97 \times 10^{-6}$ and $29.97 \times 10^{-6}$ per degree C. were obtained depending on values for thermal expansion of glass constituents. The value $28.62 \times 10^{-6}$ was obtained experimentally.

Expansion coefficient for beer of 12 deg. Plato is $37.33 \times 10^{-5}$ (per deg. C.), larger than that of water ($34.39 \times 10^{-5}$). Coefficient increases linearly with original gravity between 8 and 18 deg. P.

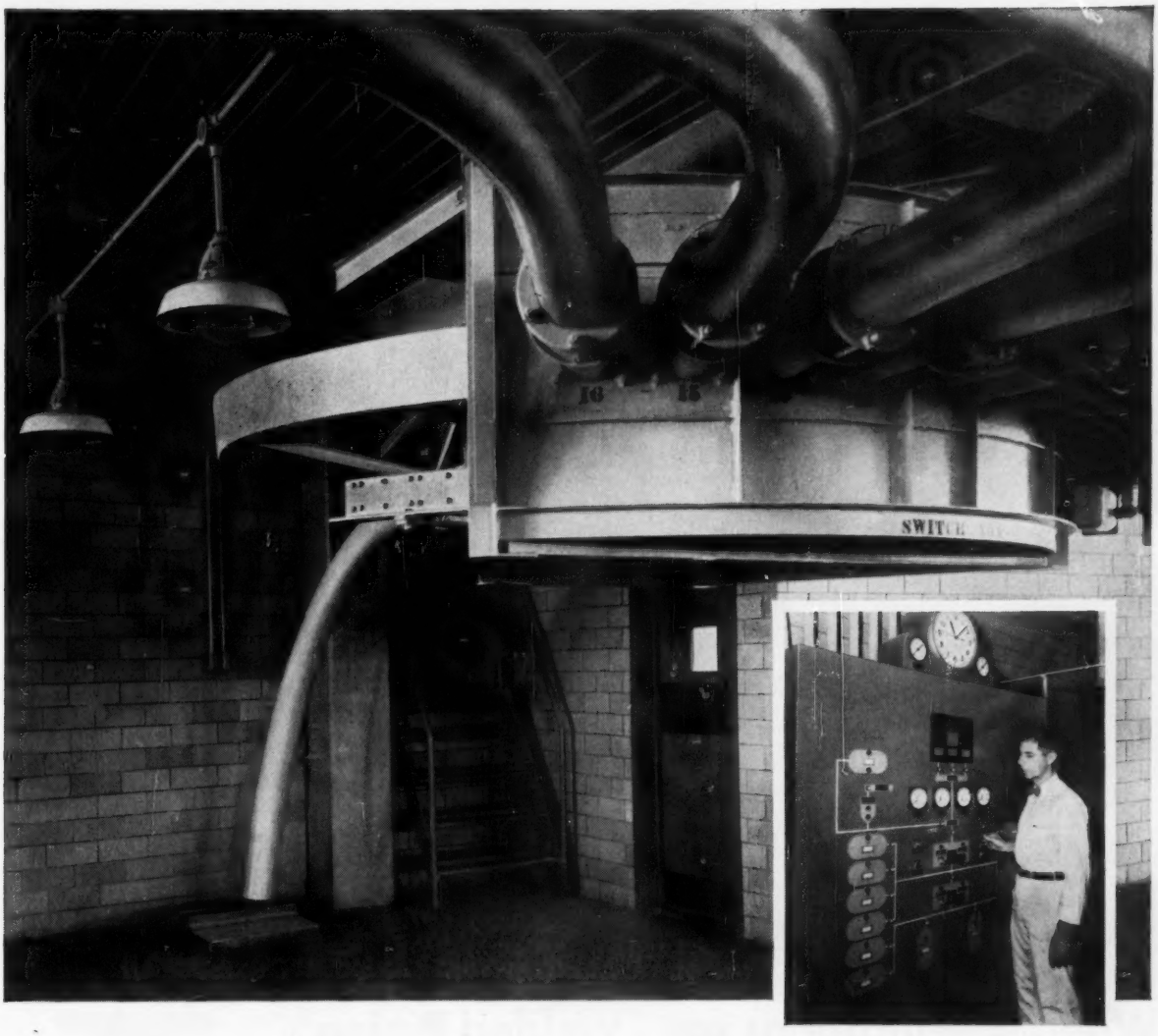
Bottle headspace has a dominating effect on pasteurization pressure. Bottled beer containing 4.10 g. of $CO_2$ per l. (2.3 volumes) had an experimentally determined pasteurization pressure of 40 psig. at 149 deg. F., with a headspace of 5% of bottle volume. With a 2½% headspace the pressure rose to 127 psig.

On cooling from pasteurization to room temperature beer does not dissolve gases from the headspace, as might be supposed. On the contrary, it gives up $CO_2$ on cooling. Initial $CO_2$ pressure is not a factor in changes of beer clarity, turbidity, foam quality, or taste that may follow pasteurization. — *Brauwissenschaft* 9(11), 288-95, 9(12), 324-30, 1956.

## Beer Foam Evaluation

A satisfactory and reproducible method of evaluating beer foam comprises pouring a bottle mechanically into a glass cleaned with trisodium phosphate solution and rinsed with water.

To evaluate the foam, the glass is placed under a microscope mounted on an arm that can be lowered steps of precisely 1 cm. When the surface bubbles come into sharp focus in the field of view a stopwatch is



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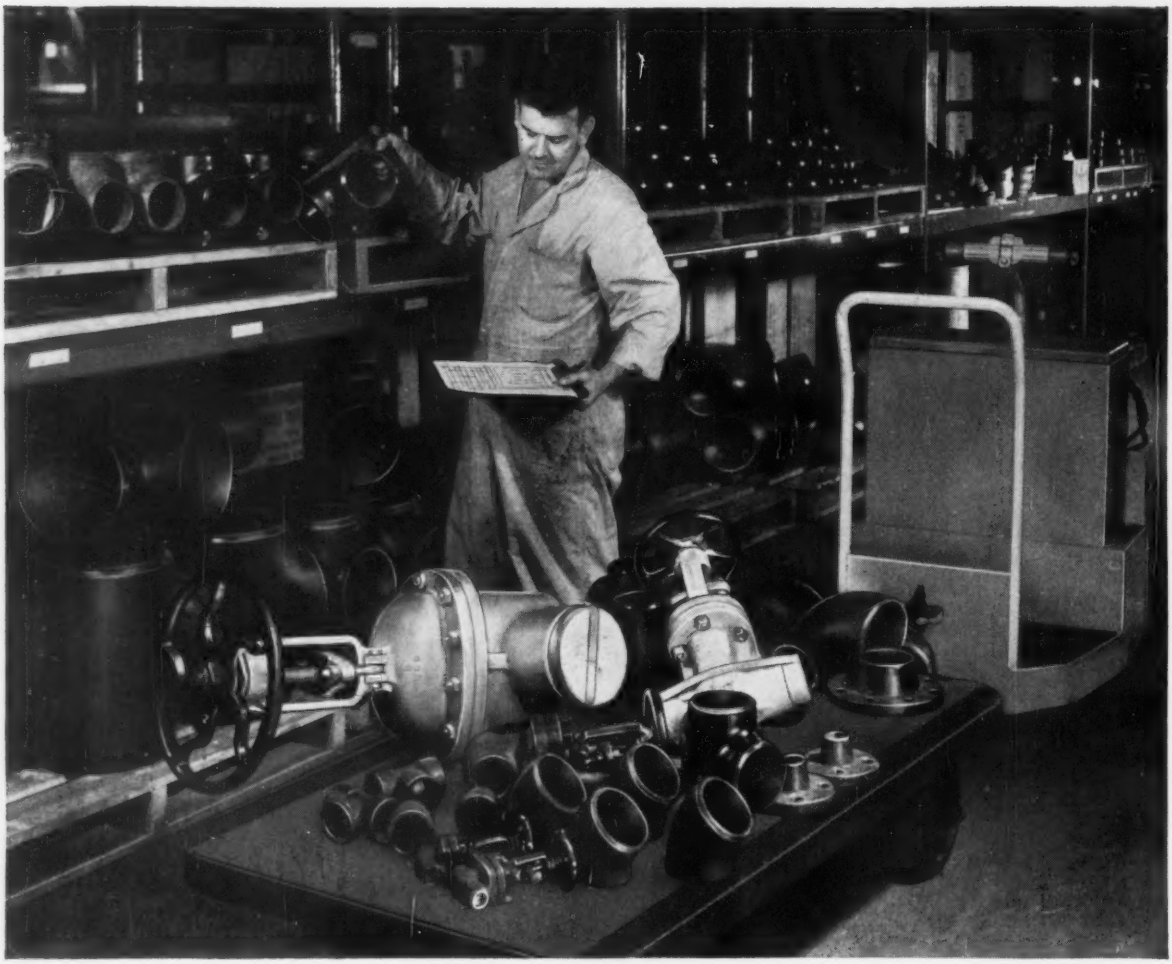

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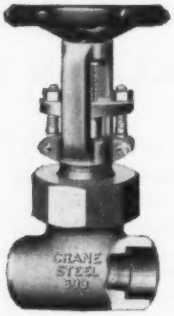


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started and the microscope is lowered exactly 1 cm.

When the foam has collapsed 1 cm. and the bubbles are again sharply in focus, the watch is stopped. Number of seconds required for the foam to drop 1 cm. in the glass is its "stability figure".

A stability figure of less than 50 sec. indicates poor foam, 75 sec. is average, and 100 sec. is very good. Method is easy, rapid, and approaches evaluation of the foam as the consumer sees it.—*Bulletin de l'Association des Anciens Etudiants en Brasserie de l'Universite de Louvain*, 52(2), 77-84, 1957.

### Bacteria Seen Developing Resistance to Antibiotics

That spoilage organisms on poultry processed with chlortetracycline (CTC) and oxytetracycline, may be types that have acquired resistance to these antibiotics, was indicated by recent tests.

When bacterial isolates from poultry (held at 45F. until spoilage occurred) were tested for resistance to CTC, it was found that the bacteria from spoiled birds never exposed to CTC were non-resistant to it. However, of 9 isolates from birds not treated with CTC, but processed in a plant using the antibiotic regularly on part of its pack, 7, 6, and 4 (78, 67, and 44%) were resistant to CTC at concentrations of 5, 10, and 15 ppm., respectively. Isolates (38) from birds treated with CTC in a plant which regularly used the antibiotic were 63, 39, and 24% resistant.

Examination of plant conditions showed that resistance could be acquired by bacteria growing in locations, or on equipment, where exposure to CTC was more or less regular.—*Applied Microbiology*, 5 (5), 331-33, 1957.

### "Can-Release" Compounds

As revealed in patent specifications, the following 4 groups of complex organic compounds exhibit "can-release" properties:

Group I: Alkyl compounds: (a) containing the cycloimidine ring, (b) cycloimidine and bridged cycloimidine compounds. Group II, bridged cycloimidine compounds. Group III, bis cyclo compounds, obtained by reacting normal fatty acids

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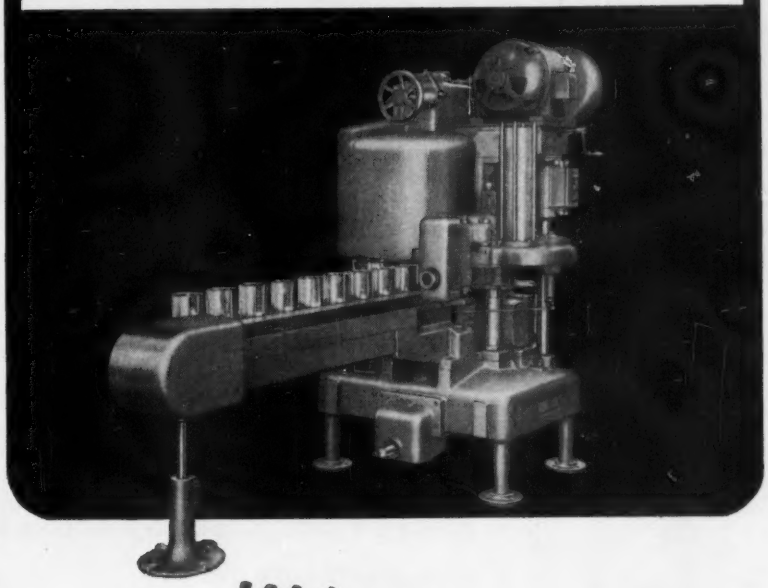

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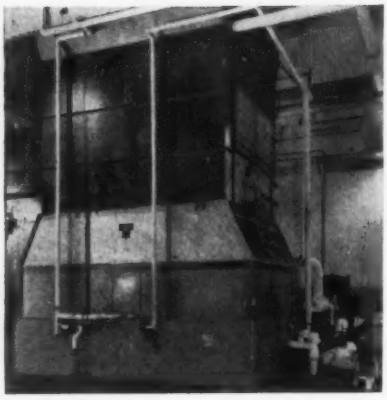

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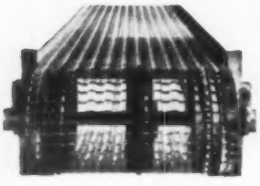

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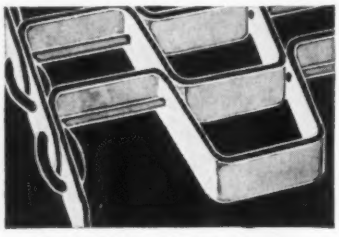

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**BOX 124** *La Porte, Indiana*


## Advances in Technology

having at least 4 $N_2$ atoms in the chain, with polyalkylene polyamines having at least 4 $N_2$ atoms in the polyamines, and wherein 2 mols of acid are reacted with 1 of the polyamine at 150-300 C. Group IV, aldehyde reaction products of Group III.

From 0.01g. to 0.10g. of an agent is sufficient to coat inner surface of an ordinary 12-oz. food can.—U. S. Patent 2,800,410, July 23, 1957.

### Hydraulic Churn-Drive

A stainless steel churn made in Germany now features hydraulic drive that acts simultaneously as clutch and brake, and permits any desired speed of rotation.

Unit comprises driving and driven rotary pumps, each with 4 floating vanes, installed in cylindrical cavaties and interconnected by passages within a large eliptical casing which is adjustable horizontally. Oil is used as driving fluid.

When churn is still, casing is so positioned that driving pump is concentric within its cavity and no pumping occurs. By moving it to one side this pump starts and forces oil through the driven one which, in turn, transmits the rotation to the churn's barrel.

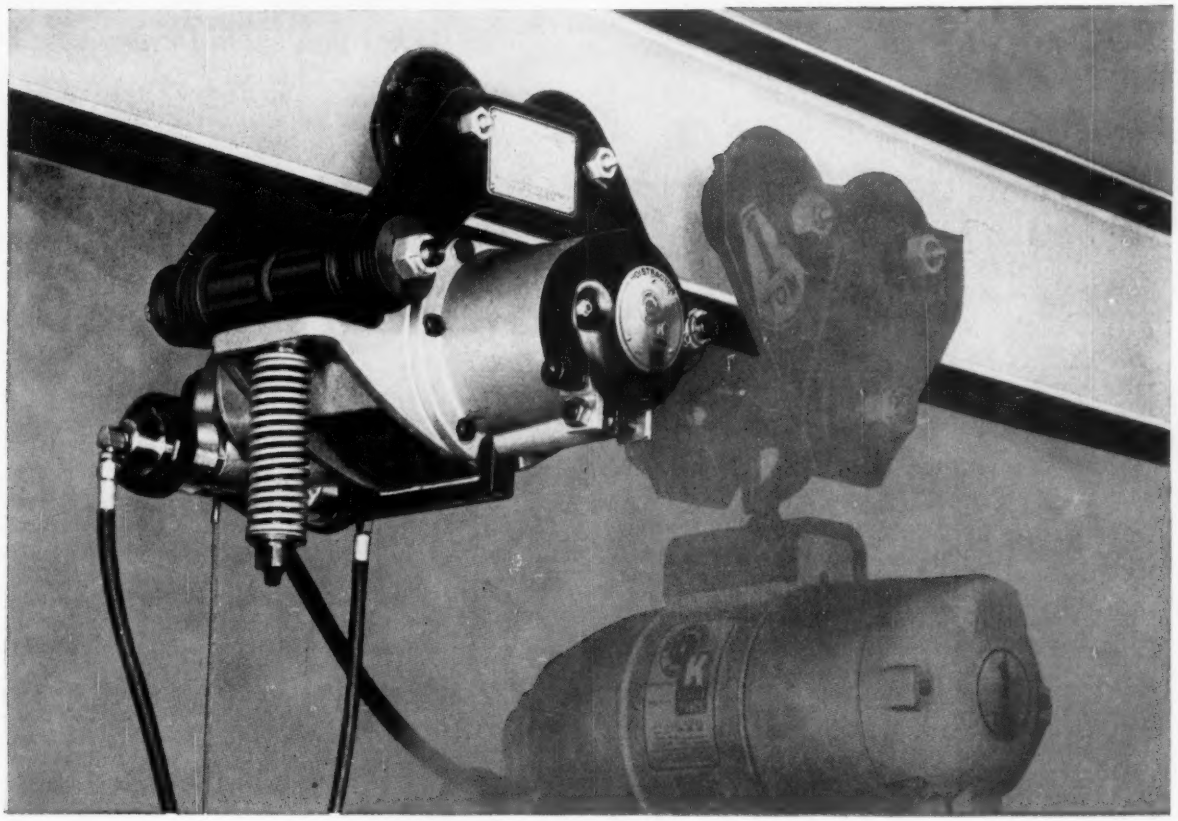
Speed of rotation is determined by rate of oil delivery by drive pump which depends on its distance from the center. Direction of rotation of barrel can be changed by moving casing in opposite direction—at lower speeds this can be done without stopping. Drive is provided with safety valves that protect it against overloading and other damage.—*Molkerei-u. Käsereiztg*, 8 (14) 408, 1957 (in German).

### Solid Flavoring Composition

Protection against oxidation and preservation of aroma and flavor are advantages claimed for a patented process for producing a solid emulsion of essential oils useful in flavoring foods.

As a specific example, cold-pressed orange oil was stabilized and added to corn syrup at 240F. Moisture in the corn syrup had previously been adjusted to 3.0-8.5%.

Mixture was agitated for 5 min. in steam-jacketed mixer, poured into thin sheets and cooled to solidification. Then it was ground to 20-mesh size, washed with isopropanol and vacuum-dried.—U.S. Patent 2,809,895, Oct. 15, 1957.



# New HOISTRACTOR adds push-pull power to any beam hoist

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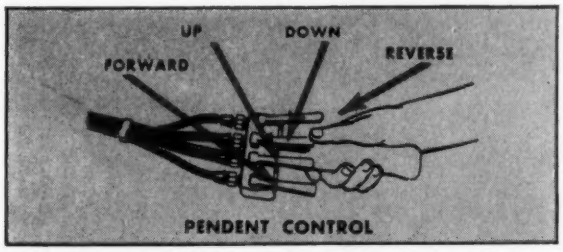
This new tractor unit simplifies moving heavy loads to truck, stock bin, machine tool or dip tank. Now, one man handles jobs such as these with greater speed and safety—without fatigue.

Powered by an axial-piston type air motor, the powerful, lightweight "Hoistractor" exerts 250-lb. drawbar pull on a beam. Speed is variable from slow creep to full-load speed of 70 ft. per min., with a no-load speed of 150 ft. per min.

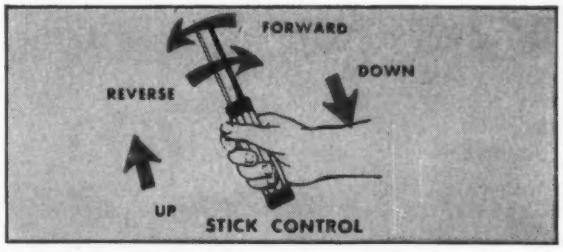
Sensitive air controls permit smooth acceleration and deceleration . . . accurate load spotting. Powerful enclosed mechanical brake, easily adjusted, provides positive, safe stopping.

Get all the facts on the new Keller "Hoistractor." Request Bulletin 87-1.

## ONE-HAND CONTROL—TWO TYPES AVAILABLE




Squeeze hand grip has up-down operating levers for hoist and fore-aft levers for "Hoistractor."




Swiveled rod with four-way grip control. Raising or lowering the grip raises or lowers hoist load.

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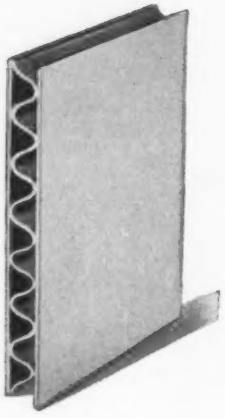
*What you should know about*

# Why do they put "permanent waves"





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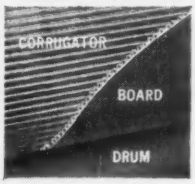
*"flutes" in Union Boxes*

# in corrugated boxes?

The small "waves," or flutes, in the center section of corrugated board are a vital box construction feature. Like bridge trusses, they absorb and distribute shock — provide extra rigidity for the walls of your shipping container.

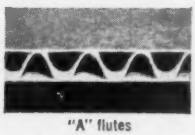
Flutes are like bridge trusses

All flutes, as the illustrations show, are not alike. No one is "best." Each does a specific job. Selecting the type you should be using calls for a detailed analysis of your product. This is one small part of Union's complete package engineering service. These fundamentals, however, are excellent guideposts:




The corrugator forms the flutes

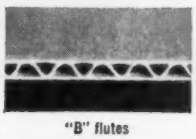
### *An "A" for cushioning*



"A" flutes

"A" flutes were the first type used in corrugated box manufacture. They have the highest arches—about 3/16 inch. "A" flutes are generally used for fragile articles because their greater height offers extra cushioning protection and better stacking strength.

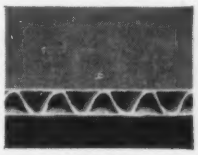
### *"B" flutes–smallest and stiffest*



"B" flutes

"B" flutes are lower, stiffer than "A," have 42 per cent more flutes per foot. Because of reduced thickness, "B" flute board makes a neater package, takes up less warehouse and car space. Excellent for heavy items like canned goods which support their own weight, thus require less shock resistance.

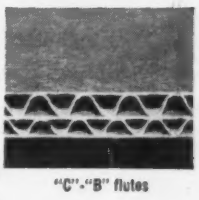
### *"C"—the in-between flute*



"C" flutes

Half-way and happy medium between "A" and "B" are "C" flutes, probably the most commonly used today. They combine the best features of the other two and are often an excellent compromise.

### *Combinations may be needed*



"C"-"B" flutes

Flutes may also be combined, one on top of the other, to form a double wall container. The combinations most generally used are "A"-"B" and "C"-"B." The double walls provide greater protection and cushioning, and are ideal for heavy duty containers.

Union Box engineers are always ready to help you determine the proper flute, or combination. You'll find, too, that the flutes in Union Boxes are consistently well formed—each of uniform height—each taking its full share of the load.

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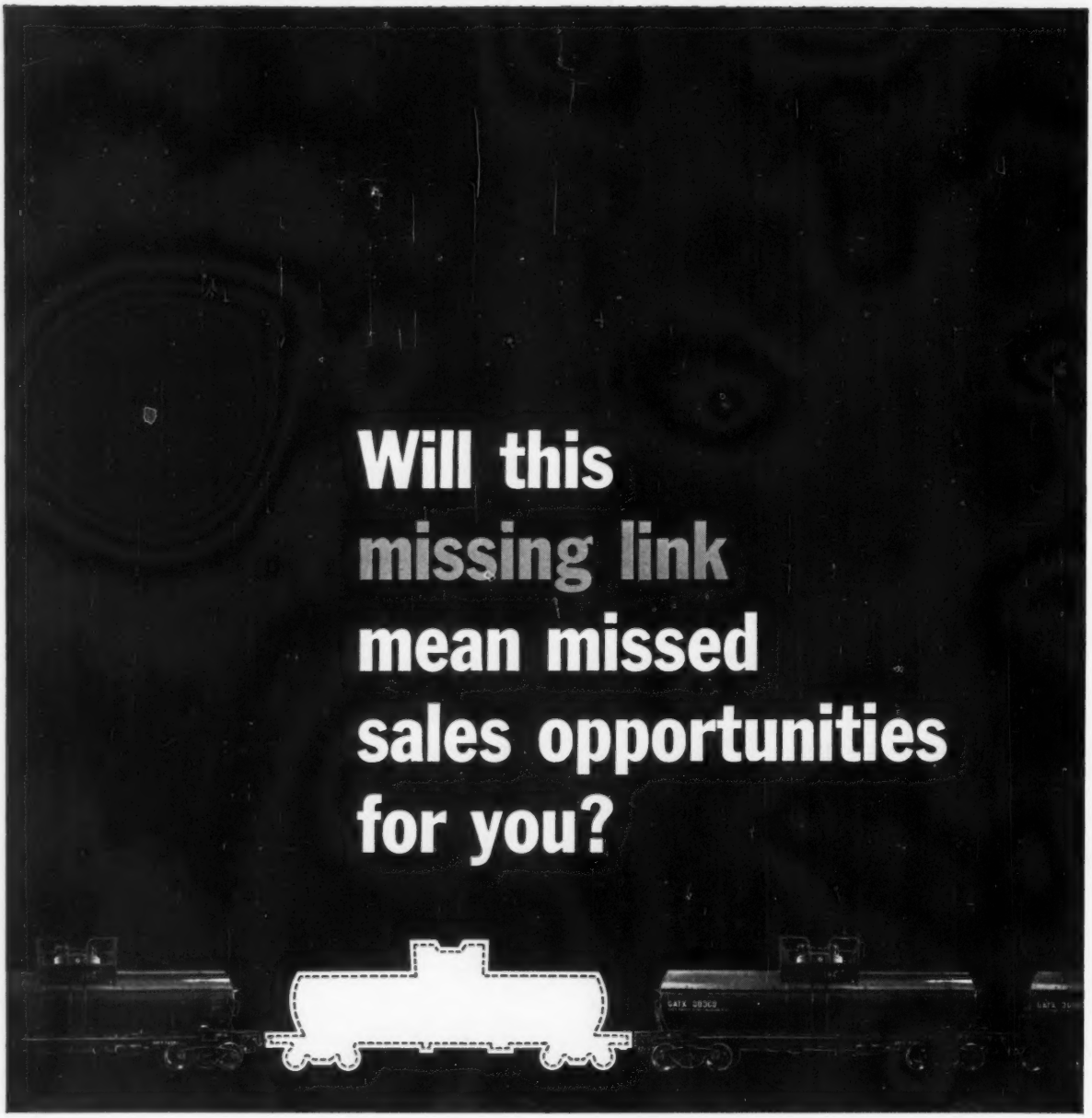


You'll want every general-purpose tank car you can lay your hands on in the decade ahead. Forecasts point to booming production and sales, and a vastly increased demand for shipping facilities. But normal obsolescence affects tank cars, too. A shortage of steel, plus the time required to build, will make for scarcity. That's why alert businessmen are already examining transportation requirements—planning for tomorrow's markets . . . today.

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# MEN & COMPANIES

**Heat Partisan . . .** "For overall contribution and specific activity in thermal processing," Dr. Charles Olin Ball will receive 5th Annual 49'er Service Award at the 1958 National Canners Convention.

He predicts heat will stay first among sterilizing methods because it "results in better-tasting foods." But, he says, "we must have improvements in techniques."

Some of these may be linked to storage temperatures. And he is now conducting a 4-yr. project to determine comparative effects of storing at 25, 35, 50, and 85° upon HTST- and conventionally-processed foods.

Dr. Ball was founder and first editor of "Food Technology," the journal of IFT. Since 1949, he has been professor and research specialist at Rutgers U.

Dr. Charles Olin Ball

Dr. Bruce H. Morgan

**Irradiation Promise . . .** "By the early '60s, radiation-pasteurized fruits and vegetables —with meats closely following—will make a gradual appearance." So forecasts Dr. Bruce H. Morgan, who has rejoined Metal Research & Development Dept. of Continental Can Co. as senior food technologist.

For past 4 yr., he has been with Army QMF&CI, where he organized the project for preserving food by ionizing radiation.

He is "convinced pasteurization of foods will be the first application of ionizing radiation. But FDA clearance and availability of equipment to apply radiation and measure dosage will dictate appearance. Goal of total sterilization is faced with too many problems."

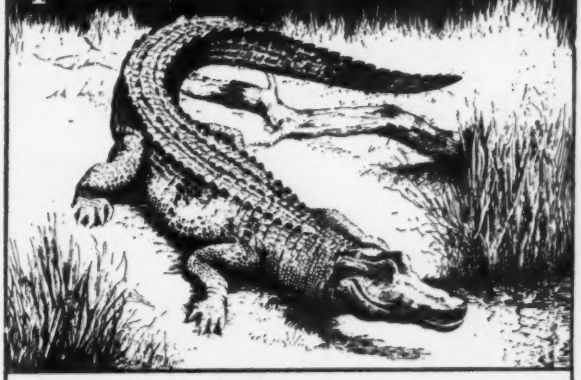
**Coordinator . . .** To "strengthen and coordinate selling, manufacturing, and technical research, and engineering services to customers, DCA Food Industries has set up an "Industry Supply Group." Tapped for president of the new organization is Elmer Simonyi.

For past 6 yr., he has been v.-p. and general manager of the bakery div. A factor in his new appointment was tremendous growth the division has enjoyed.

New group comprises the bakery, processor, ice cream, and Mayflower production divisions of DCA.

Elmer Simonyi


Famous for protection ...



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**ORANGE SOLID OIL**

*--is famous for protecting machinery*

***Lasts two to four times as long as ordinary greases.***

***Saves bearings, material, power, time...and...labor.***

***Keeps production--UP! Maintenance repairs--DOWN!***

Like the tough protective hide of the alligator--the long-lasting, super lubricating film provided by Orange Solid Oil is famous for protecting machinery. Not only does it do a more efficient lubricating job--but it stays on the job four times longer. That's why it is used and recommended by the largest manufacturers of dairy, creamery, ice cream, and cheese machinery and equipment.

***1--Pure, unadulterated petroleum solidified oil***
***2--Practically odorless, tasteless, and transparent***
***3--Will not turn rancid--free of animal and vegetable fats***
***4--Cannot pit bearings--contains no alkalis***
***5--Non-corrosive--will not gum, cake, dry, or harden***
***6--Contains no fillers or abrasive of any kind***
***7--For use in all Alemite and Zerk fittings, and grease cups.***

For positive lubrication protection--use Orange Solid Oil. It will help you minimize production shut-downs...reduce maintenance costs...and...keep your output high.

Over 200 leading distributors from Maine to California stock Orange Solid Oil. It is packed in 4 oz. tubes...and...1, 10, 25, 100, 225, and 375 pound containers. Quick delivery from your local distributor. If he can't fill your order--phone, wire, or write for name and address of your nearest source of supply.

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**ORANGE HOMOGENIZER OIL NO. 50**
**• Refined from aircraft stock • Does not foam • Moisture resistant • Will not form residues or sludges**

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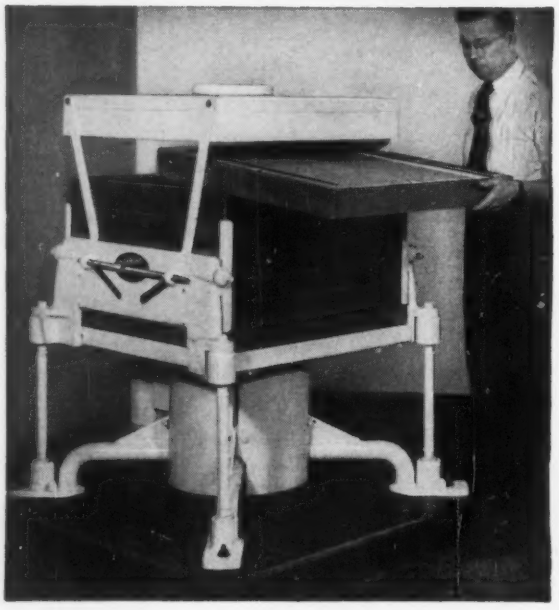
## with BIG SAVINGS!



RICHMOND/SPROUT-WALDRON

## Gyro-Whip Sifters

Amazingly compact, yet big in output, Gyro-Whip Sifters save floor space. Simplified design reduces maintenance and cleaning time and makes possible the most rigid standards of sanitation.

The average Gyro-Whip is only 48" high, requires only 3½' x 3½' floor space, and operates on only ¾ h.p. Bolting areas range from 47.5 up to 95 sq. ft.

These Gyro-Whip Sifters are available in sizes from 3-sieve to 20-sieve mounted models. Also available are free-swinging supersifters with as many as 180 sieves. Can sift from 2 mesh up to 325 mesh. Stainless steel and wood construction. Aspirator tips to air wash graded products can be provided. Installation can be on the stream. It is a self-contained unit, ready to be bolted down and connected to existing spouting.

*Write for Bulletin 135-A.*

PR/505-F

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EQUIPMENT FOR SIZE REDUCTION, MIXING & BLENDING, PELLETING & CUBING, BULK MATERIALS HANDLING, PRODUCT CLASSIFICATION.


**Heads Agricultural Talent** . . . C. L. Rumberger, v.-p. for H. J. Heinz Co.'s research and q.c. div., has been elected president of Agricultural Research Institute.

"I attribute the tremendous growth of U. S. agriculture to scientists seeking basic information," says he, and points out that ARI concentrates top scientific talent of industry, education, and federal and state agencies for tackling agricultural problems.

Also named to ARI governing board are: Dr. P. K. Caldis, Calif. Packing Corp.; Dr. G. C. Scott, Green Giant Co.; B. M. Shinn, Armour and Co.; and Dr. J. O. Young, Libby, McNeill & Libby.

C. L. Rumberger

Dr. Ernst T. Theimer

**Flavor Scientist** . . . Infrared analysis and vapor chromatography have opened a rich lode in flavor research, according to Dr. Ernst T. Theimer, new research director for van-Amerigen-Haebler, Inc. "These new instrumental techniques," he says, "make possible the identification of hitherto unresolved natural flavor components."

He cites the problem of analyzing the aroma of coffee, where the techniques "might lead to synthesizing of an acceptable coffee flavor."

Dr. Theimer has long been active in the Essential Oil Assn., and is chairman and founder of its Instrumental Analysis Committee. He is a National Councilor for American Chemical Society.

**Food Upgraded** . . . With elevation of V.-P. Robert G. Spears to first food representative at top corporate level, Lever Brothers points up its expansion in this field.

Company is now selling a new dessert topping, is test-marketing Liquid Spry, and has other new food products on the way.

Mr. Spears is a former president of the National Assn. of Margarine Mfrs., and assisted in the long fight to repeal federal tax restrictions on yellow margarine.

Succeeding him as head of the Foods div. is Robert McDonald, who joined Lever's in 1950 as private brands manager of Good Luck (later Foods) div.

Robert G. Spears

**Walter R. Barry**, v.-p. and co-administrator of consumer food activities for General Mills, has retired. **V.-P. A. Z. Kouri**, recently named co-administrator with him, will assume full responsibility of the office.

**A. C. Bartz** is now general manager of The Cog Corp., Chicago. He was formerly with Chicago Stainless Equipment Corp., and more recently with Mojonnier Bros.

**Kenneth C. Bertsch** has been named v.-p. of E. & J. Gallo Winery, Modesto, Calif.

**John P. Diercks** has been appointed v.-p. for finance and

# *What you can't see . . . benefits you most*

Sure this is the best-looking fork lift truck on the market today. What you can't see is the thousands of design hours and dozens of engineering ideas that have gone into this new *Clarklift.*

Clark Equipment Company is unique as a company that *specializes* in materials handling. *All* of its engineering and research facilities are available for the design and improvement of materials handling machines and methods. This advanced research, long experience, seasoned specialization—are the *unseen* factors in a Clark product that assure you the best in performance and dependability . . . the lowest possible operating costs.

A 24-page brochure detailing the new *Clarklift* is available on request. Shown are its many engineering advances.

For your personal copy, write direct to: *Clarklift,* Clark Equipment Co., Battle Creek, Michigan.

**CLARK® EQUIPMENT**

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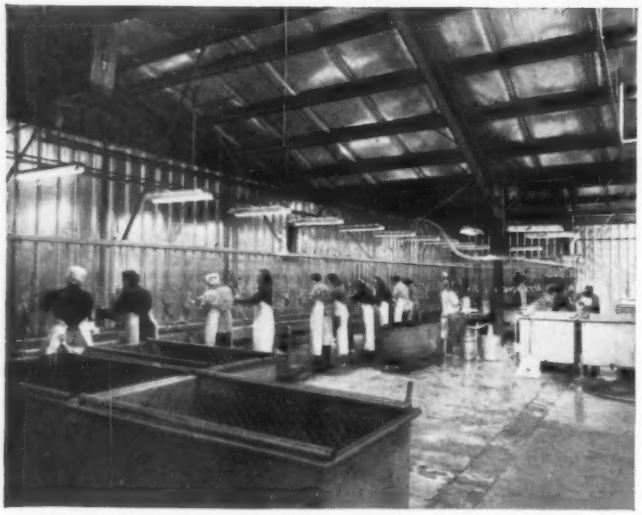
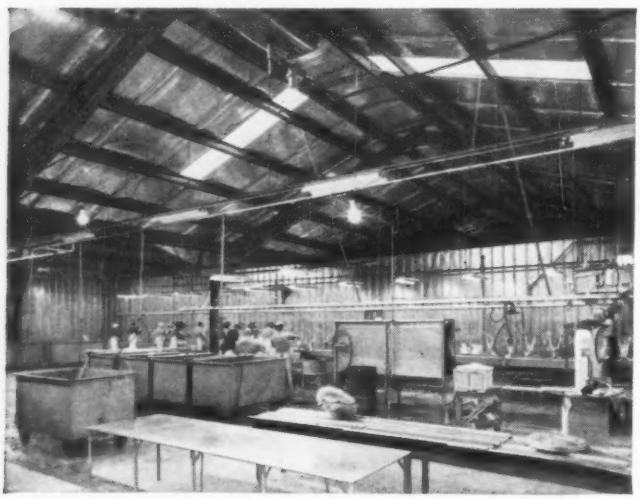
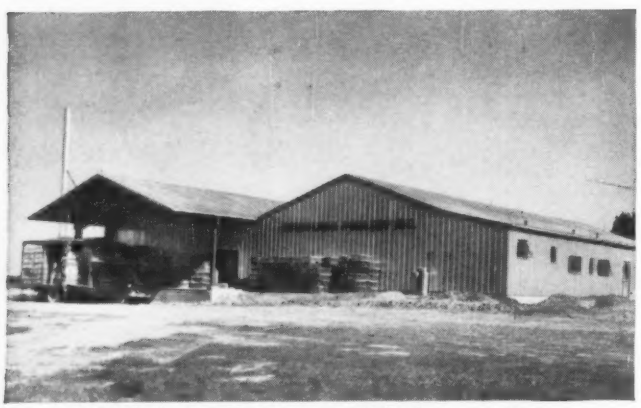


Dairyland Poultry Inc., Butler processing plant at Endeavor, Wisconsin.



Note excellent natural lighting, ventilation and sanitation characteristics.



Simple, functional lines create essentially pleasing exterior.

# LOOKING FOR A WAY TO BUILD BETTER FOOD PROCESSING FACILITIES?

It is just the nature of the food processing industry that physical plant investment be kept to a minimum. Competition is keen. Margins are low—low even in the midst of a veritable revolution in processing, packaging and distribution. Construction expenses that would be considered normal in other industries are often sheer luxuries in food processing facilities.

That's why Butler pre-engineered buildings are so obviously *right* for food processing plant and storage construction. Your initial investment in planning and engineering time is minimized. Butler buildings are half finished before you sign the order—ready for occupancy weeks to months sooner than traditionally-built structures. The finished plant outperforms buildings costing much more. Post-free spans up to 120 feet provide unobstructed interiors for flow planning. Human comfort—better light, ventilation and ease of heating are characteristics pre-engineered into Butler buildings.

You can expand or change a Butler plant with much less time and money, practically no demolition. Doesn't this sound like the building for this industry? It is priced to prove it . . . not the lowest-cost way to get mere shelter, but the lowest-cost suitable construction.

**For further details on Butler buildings—the low-cost way to build better food processing facilities, contact your Butler Builder. He's listed in the Yellow Pages of your telephone directory under "Buildings" or "Steel Buildings." Or write direct.**

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procurement at Stahl-Meyer, Inc.

**John A. Grammer** and **Gordon C. Young** have been elected executive v.-p.'s of Beech-Nut Life Savers, Inc., New York City.

**Dr. H. H. Haller**, of USDA, will head American Chemical Society's division of agricultural and food chemistry. He succeeds Dr. D. M. Doty, of American Meat Institute.

**J. L. Robinson** moves up to presidency of Jabez Burns & Sons, Inc., New York City.

**Roy D. Wooster**, v.-p. and a director of Borden's, has been elected executive v.-p.

## Industry

**Interstate Bakeries Corp.** has entered Rocky Mountain area with purchase of Campbell-Sell Baking Co., Denver.

**The Nestle Co., Inc.**, has contracted for a $1 million addition to its instant coffee processing plant at Ripon, Calif.

**Pillsbury Mills, Inc.**, will open a major food distribution center at Huntington, W. Va.,

**Signal Oil & Gas Co.**, Los Angeles, announces its entry in the food processing business with purchase of Scudder Food Products, and Blue Bird Potato Chip. Deals were closed for total of $5,870,000.

## Associated Industries

**American Can Co.'s** total 1957 capital outlay is expected to amount to about $52 million.

**Atlas Powder Co.** has established a toxicology section to explore the safety of its products, because of their "increasing use in foods and other consumer items."

**Link Belt Co.'s** E. Berg has been elected president of Conveyor Equipment Manufacturers Assn.

**Chas. Pfizer & Co., Inc.**, plans to complete its new research lab at Groton, Conn., by late 1959.

**Western-Waxide Div. of Crown Zellerbach Corp.** will add a 5,650-sq.ft. wing to its lab at San Leandro, Calif., for housing experimental packaging machinery.

## Deaths

**Howard W. Files**, 64, v.-p., Pillsbury Mills, Inc.

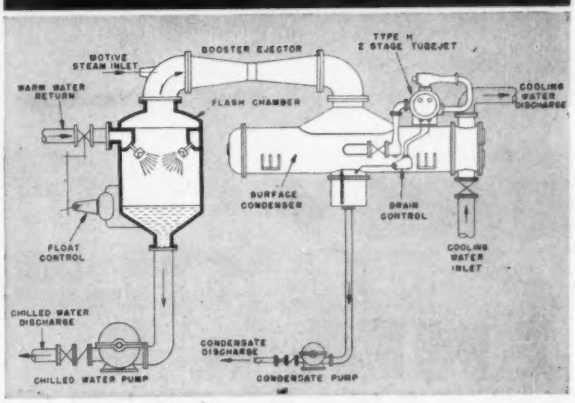
**J. Thomas Haigh**, v.-p. and marketing director, The Strong-Scott Mfg. Co., Minneapolis.

**Alfred Liebmann**, 86, chairman of executive committee, Liebmann Breweries, Inc.

**Robert J. Remaley**, 47, director, scientific development & Lab. Dept., American Dry Milk Institute, Inc.

**Switches are thrown to dedicate J. A. Folger & Co.'s** new multi-million dollar plant in L. A. Operations are "so fully automated that it is unnecessary for the human hand to touch the coffee once it's unbagged," say company officials. Unique equipment includes 7-ton vacuum closing machines (American Can Co.) and a floor-level conveyor system (Food Machinery & Chemical Corp.) which unloads 41,000 lb. of green coffee in one operation. Plant's annual output is rated at 36,000,000 lb.


**Save money 2 ways**



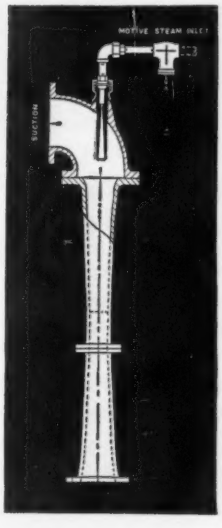

Above schematic diagram shows Wheeler Jet Vacuum Refrigeration Unit with surface condenser. Unit is easily adapted to low level jet or barometric jet condensers.

***when you CHILL Fruits, Meats, Vegetables or PROCESS WATER***

**C. H. Wheeler Steam Jet Vacuum Refrigeration** operates at exceptionally low cost because it uses low pressure exhaust steam—steam that would otherwise be wasted in your processing plant.

**Maintenance costs are unusually low, too,** because there are no moving parts, except for those in the chilled water pump. No noise or vibration, either, with Wheeler Steam Vacuum Refrigeration.

**It's an ideal refrigeration system** for any application requiring chilled water temperatures of from 35° to 65°F. Wheeler Jet Vacuum Refrigeration has proved itself time after time in the chemical, food and process industries.




**See your representative** or write direct to C. H. Wheeler of Philadelphia for complete information.

Wheeler "Tubejet"® Booster Ejectors withdraw vapors at high vacuum, and discharge them to a lower vacuum in the condenser. Air and non-condensable vapors are removed from the condenser by a two-stage Wheeler "Tubejet".

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# Pay Of College Teachers... Where The Russians Are The Capitalists

This editorial deals with a simple question about college faculty salaries: Which country pays its teachers better, Russia or the United States? It's a good question, with a sadly embarrassing answer.

That American college and university teachers are underpaid is not a novel observation. But what has happened to the economic status of their profession can be put in more candid terms. **As far as financial incentives are concerned, we have virtually socialized the academic profession.** Teaching has become such a poorly paid career, with so little prospect of material reward for outstanding performance, that it simply does not attract enough highly qualified young men and women.

**Ironically, the Soviet Union has deliberately and successfully used capitalist incentives to improve its educational system.** Although the Russians show an utter disregard of civil liberties, they pay their teachers well and confer on them all the prestige and privileges the Soviet society can offer. Russian professors, together with party officials and scientists, have become the privileged upper class of a supposedly classless society.

## Incentives To Be A Teacher

To be a college teacher requires high intellectual competence and long, sometimes costly, formal training. Aside from the appeal of academic life, what incentive does college teaching offer bright young men and women?

**In the U. S., the average faculty salary is little more than the average income of industrial workers.** According to the National Education Association, the average faculty salary is about $5,240. College instructors receive $4,100, associate professors $5,730 and full professors $7,100. The average income of U. S. factory workers in 1956 was $4,580.

Actually, workers in many industries — steel, automobile and petroleum, for example—earn more on the average than college teachers. And skilled workers often earn more than full professors at some of our colleges and universities.

**In Russia, on the other hand, the young Soviet graduate can see that it pays — and pays very well — to choose teaching as a career.** The head of a department in a Russian university can command a salary of about 6,000 rubles a month.* This is about eight times the income of the average Russian worker, who earns 750 rubles a month.

The Russian professor comes off very well in terms of what his income will buy. It has been estimated that, based on Soviet consumption patterns, 6,000 rubles a month is worth about $7,200 a year — or higher than the average professor's salary in the U. S. Of course, it is difficult to compare living standards in two countries as different as the U. S. and Russia. But particularly in the field of science — where the salaries can run to 15,000 or more rubles a month — it is clear that the Soviet professor enjoys a higher real income than that offered his American counterpart by a much more prosperous economy.

## Incentives To Be A *GOOD* Teacher

**Russia also offers much higher premiums than the U. S. to those who attain distinction in teaching.** Teachers at the university level earn significantly more than teachers in high schools, and university instructors can look forward to a sharply progressive rise in earning power as they

* *Soviet Education for Science and Technology* by Alexander Korol of the M.I.T. Center for International Studies.

**How Faculty Salaries Compare With Industrial Wages**

**(Worker's Wage In Each Country = 100)**

*Sources: Center for International Studies, M.I.T.; National Education Association; McGraw-Hill Department of Economics

advance to higher positions. The spread between the income of a full professor and the lowest academic position is greater than fifteen to one. In addition, full professors can earn a healthy bonus if they are elected to membership in the Russian Academy of Sciences.

In the U. S., by contrast, full professors on the average earn less than twice as much as beginning instructors. And many college professors earn less than public school teachers in large cities. Even a full professor's pay does not compare with earnings in other professions or in positions in industry requiring similar training. The point was well summarized in a recent speech by Marion B. Folsom, Secretary of Health, Education and Welfare: "It is nothing short of a national disgrace that we are discouraging people who want to teach by offering salaries that are far below the levels justified by their training and far below the levels which others are willing to pay."

Our colleges and universities, as well as our teachers, find themselves in a serious predicament. Faced with a shortage of both funds and teachers, they cannot reward distinguished performances. Limited resources for salary increases have gone predominantly to the lower ranks, so that an adequate number of teachers could be retained. Meanwhile, potentially fine teachers are being siphoned off into better paid occupations.

**The shabby treatment of our teachers threatens to undermine, not only our educational standards, but our free enterprise system itself.** There is the recent example of a liberal arts college which discovered that five of its graduating seniors were being offered starting salaries higher than those paid any of their professors. It would be surprising if experiences like this did not place a strain on the enthusiasm with which these professors deal with some key aspects of American capitalism.

Also important is the role education is playing in the cold war with the Soviet Union. The Russians have made great strides in raising the quality of their education — particularly in science and engineering. Both the number and the technical calibre of their graduates are impressive, as recent Soviet achievements testify. These successes owe much to the generous economic treatment the Russians have given their teaching profession.

## A Standard For Faculty Pay

Earlier editorials in this series have outlined various ways American business can help relieve the financial plight of our colleges and universities. They have suggested that private contributions to higher education should average at least $400 million a year over the next ten years if faculty salaries are to be raised to adequate levels and our colleges are to be able to meet increasing operating costs.

Another standard for raising faculty salaries proposed by an American businessman is this: "When a teacher's income gets up to a point where you will suggest to your boy that he ought to give some thought to teaching as a profession, then we may be approaching the right figure."

**Russia clearly has set her teaching salaries well above the "right" figure. We are nowhere near it. What this adds up to is that the Communists — not we — have become the shrewd capitalists in the vital field of education.**

*This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.*

Donald C. McGraw

PRESIDENT

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# International V8's

**Read why fleet owners say:**

## *"They're the hottest thing in our fleet!"*

Enthusiastic owners of new INTERNATIONAL heavy-duty V-8 trucks have nothing but praise for these all-truck-built power plants. On-the-job performance has proven they are first-class profit-makers.

Road time is cut by maintaining higher sustained speeds with less shifting. Outstanding fuel economy and proper gearing result in more ton-miles per gallon. Latest reports show these V-8's stay on the job longer, too.

See how these new truck-type V-8's are making out on jobs similar to your operation by looking over convincing owner reports at your INTERNATIONAL Dealer. While you are there, get behind the wheel and experience the greatest performance of any V-8 truck in the world.

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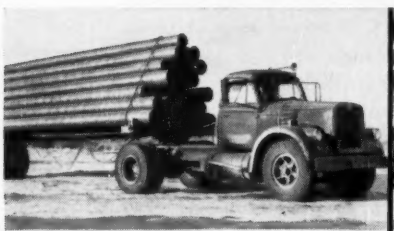

**Oil Pipe Hauler:** "We haul 42,000 lbs. net payload of oil-field pipe over mountainous terrain. In the first 6 months of operation of our INTERNATIONAL V-8 truck we have had no engine expense, average 5 to 5½ miles per gallon of gas!"

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**Steel Hauler:** "We average 40,000 lbs. of steel per load. Trips range up to 125 miles with a lot of stop-and-start driving. With our INTERNATIONAL V-8 there's less shifting on hills, it holds speed better, makes better time, keeps up with traffic."

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*for anyone who buys or uses cans—*

# Bliss is now designing, building and equipping complete can plants

E. W. BLISS COMPANY has so expanded its facilities and staff that it is now offering *complete* plant-building service to can users and manufacturers.

This "turn-key" plant concept means that we can provide a customer with everything he needs—from a survey of the economic advantage or disadvantage of operating his own plant right up to building it, equipping it, training his personnel, and getting the entire operation underway as smoothly as possible.

We will either take complete responsibility for design and construction, or work with a specialized consulting engineering firm, adding to the consultant's specialized talents Bliss' own personnel, manufacturing facilities, and long familiarity with and experience in the can manufacturing field.

For *users* of cans, the implications of this entirely new service is obvious. And the service is no less meaningful for can *manufacturers:* The regional plant—is it practical, is it economically feasible?

If you're seriously considering moves of this kind, Bliss' new "turn-key" concept deserves your thoughtful consideration. We'll be glad to talk out all the details with you. A number of our executives will be available at Bliss' booth during the Canner's Show, Atlantic City, January 18 through 22. Or if you prefer, drop us a note, and we'll arrange an appointment at your convenience.

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***Can Machinery Division***
**Canton, Ohio**


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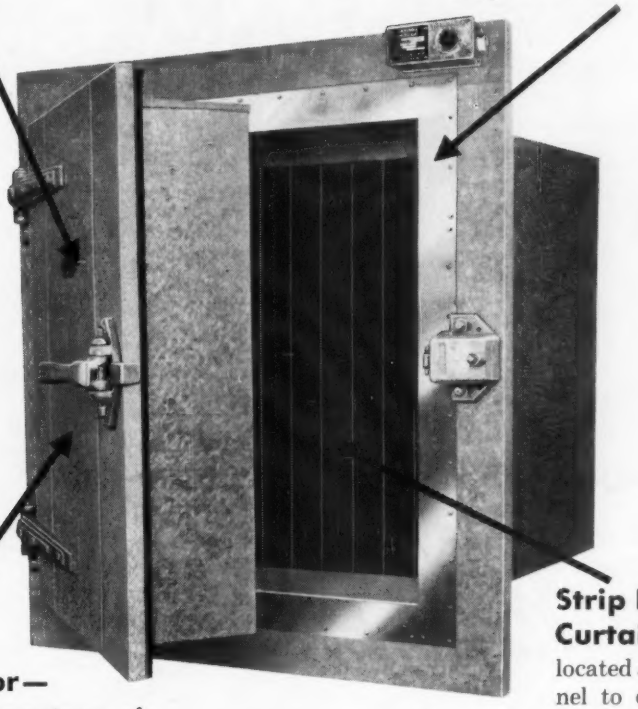
# New Jamison Lo-Temp Deep Tunnel Door speeds volume handling—saves refrigeration

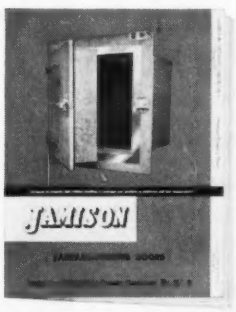
**Vap-r-tyt*Metal Cladding—**
all seams locked and soldered, all bolt holes sealed.

**FROSTOP* —**
prevents icing and freezing shut of doors . . . Thermoswitch assures safe temperature. Underwriters label.



**Lo-Temp Door—**
designed for temperatures of +15°F. down to −30°F.

**Strip Rubber Curtains—**
located at each end of tunnel to create air lock to save refrigeration.




Send for this catalog today for complete data on Jamison's full line of passing and reach-in doors.

NOW packages and cans can be moved into and out of refrigerated areas with minimum loss of cold! Jamison's new Lo-Temp Deep Tunnel Door, available with one, two or more rubber strip curtains, can be adapted to mechanized handling and the use of conveyors.

Jamison manufactures a full line of package and can passing doors including the new power-operated vertical sliding door. Complete description of all these doors is in Jamison's new catalog. For your copy, write today to Jamison Cold Storage Door Co., Hagerstown, Md.

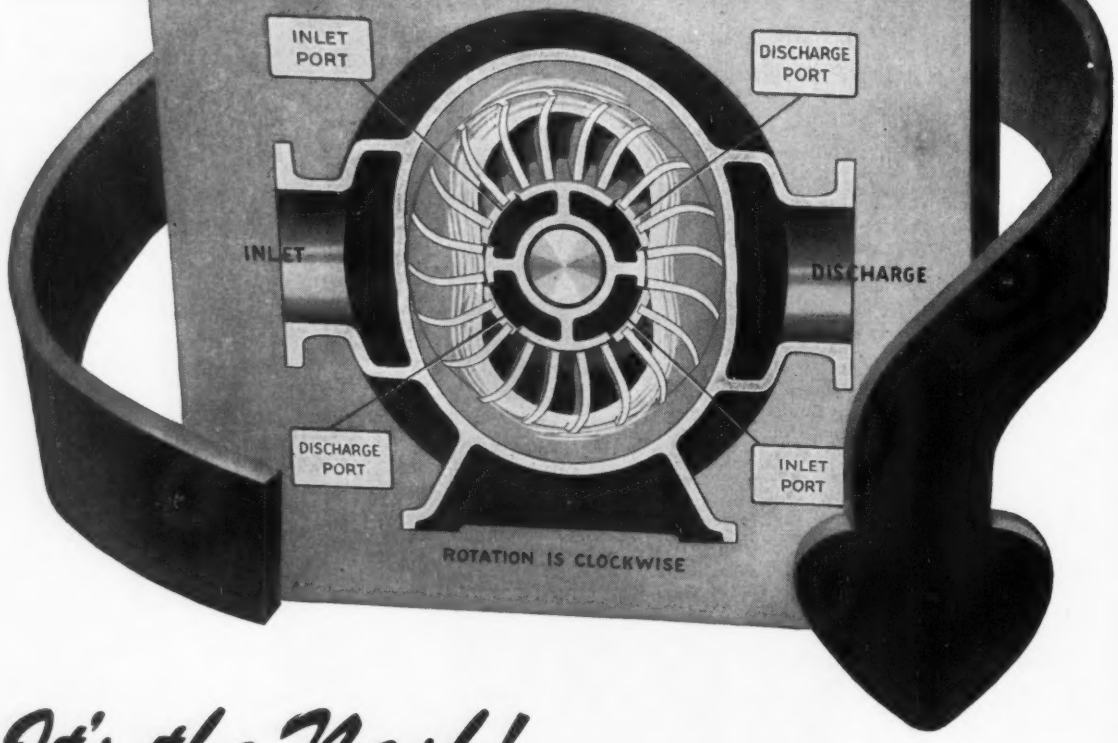
*Jamison Trademark

**JAMISON**
COLD STORAGE DOORS



For more data, circle this page number on card at back →

# This is Why the Nash is the Most Simple Compressor




# *It's the Nash!*

There are no mechanical complications in a Nash Compressor. A single moving element, a round rotor, with shrouded blades, forming a series of buckets, revolves freely in an elliptical casing containing any low viscosity liquid. This liquid, carried with the rotor, follows the elliptical contour of the casing.

The moving liquid therefore recedes from the rotor buckets at the wide part of the ellipse, permitting the buckets to fill with gas from the stationary Inlet Ports. As the casing narrows, the liquid is forced back into the rotor buckets, compressing the gas, and delivering it through the fixed Outlet Ports.

Nash Compressors produce 75 lbs pressure in a single stage, with capacities to 6 million cu. ft. per day in a single structure. Since compression is secured by an entirely different principle, gas pumping problems difficult with ordinary pumps are often handled easily in a Nash.

Nash simplicity means low maintenance cost, with original pump performance constant over long periods Data on these pumps sent immediately on request

**No internal wearing parts.**

**No valves, pistons, or vanes.**

**No internal lubrication.**

**Low maintenance cost.**

**Saves floor space.**

**Desired delivery temperature automatically maintained.**

**Slugs of liquid entering pump will do no harm.**

**75 pounds in a single stage.**

**NASH ENGINEERING COMPANY**

**313 WILSON, SO. NORWALK, CONN.**

CATALOGS ..... p. 165
BOOKS ..... p. 175
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CLASSIFIED ..... p. 181
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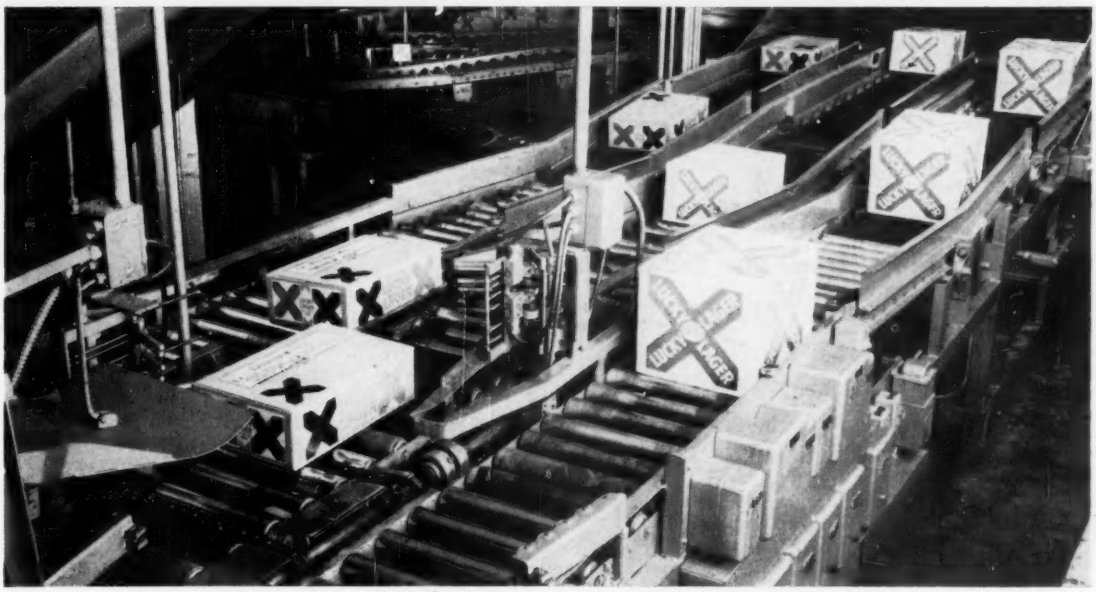
# NEW EQUIPMENT & SUPPLIES



## Conveyor-Line Case Sorter Simplifies Handling

Designed to cut case-conveying costs in package-handling plants, this automatic segregator eliminates the need for separate lines in routing different size cartons to storage or shipping.

Instead, it permits running all cases from packaging departments on a single conveyor until they reach the sorting device (FMC Case Goods Segregator). Used with automatic palletizers, unit enables feeding each case size to its respective palletizer on a short conveyor run. The device usually is installed in a plant's final-distribution area. It handles light or heavy cartons up to 25½ in. long, 17 in. wide, and 12 in. high.

In operation, mechanical 'fingers' measure height and length of each case as it enters the segregator (left in photo) from a single line. Then the carton is either sent straight ahead on the original conveyor or transferred to parallel lines to the right or left.

If required, each of these parallel conveyors can be equipped with a sorting device and takeaway lines, so that any number of different cases can be routed onto separate conveyors. Units have already been successfully operated in plants such as breweries, bottling, and cereal.—*Food Machinery & Chemical Corp., Material Handling Section, Riverside, Calif.*

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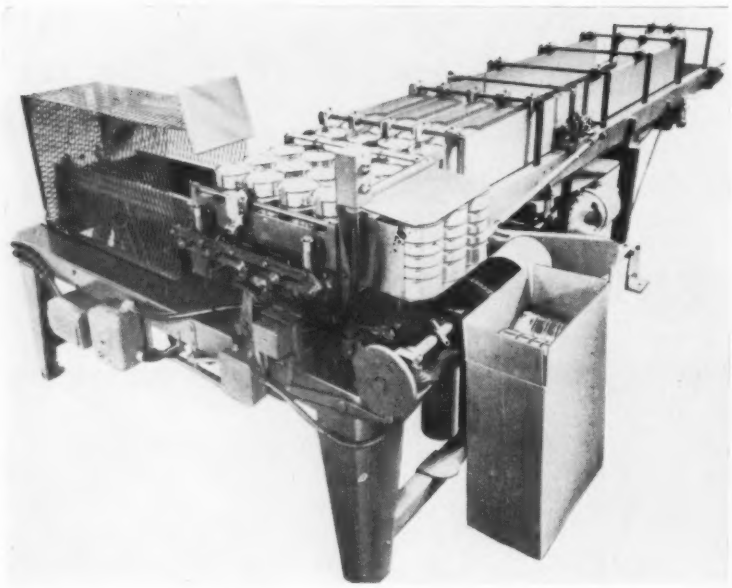
**Want More Information?**

**It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign at the bottom and mail. For your convenience, too, these items are listed and keyed in the Reader Service Section.**

CUT OUT AND FILE



## Unit Permits Use of Lower-Cost End-Opening Cases

Users of end-opening shipping cases for cans loaded single-tier by this machine report fiber saving of up to 15%.

Unit (End-Opening Caser) is designed primarily for 46-oz. cans and No. 10's, however it also handles smaller sizes. Rated at speeds in excess of 20 cases per min., it offers smooth, efficient performance.

In operation, cans travel upright on a wire-mesh belt through divider lanes and into a loading chamber. When a tier is fully assembled and a case is in position on the loading funnel, a pusher plate automatically slides the tier into the case. There is no rolling of cans, and hazards of torn labels, scratched lithography, dents, and split seams are eliminated.

Automatic safety devices prevent incomplete loading patterns and discharge of cans without a case being in proper position. Filled cases are gently lowered in a vertical plane to a take-away belt that conveys them directly to a sealer.

While filled case is being lowered, operator places an empty one over the loading tube.—*Food Machinery & Chemical Corp., Canning Machinery Div., P. O. Box 1120, San Jose, Calif., or 103 E. Maple St., Hoopeston, Ill.*

Circle 148A on Reader Service Card

## Unit Gages Heat-Transfer, Records Total Btu's

Combining precision measurements of heat and liquid flow rate, a new mechanical instrument gages heat transfer to or from a liquid, thus may be used to meter a variety of heating and cooling operations in processing and plant engineering.

Unit (Pollux B.T.U. Meter) consists of a liquid flow meter and recorder, a temperature-difference sensing device, and an integrator. Latter multiplies the temperature difference between supply and return liquids, and flow rate. The product in Btu's is automatically totalized on one counter, while total flow is recorded on a second one.

Meter is corrosion-proof, easily installed, and requires no lubrication. It can be provided with a remote recorder.—*Air Conditioning Equipment Corp., 219 E. 44th St., New York City.*

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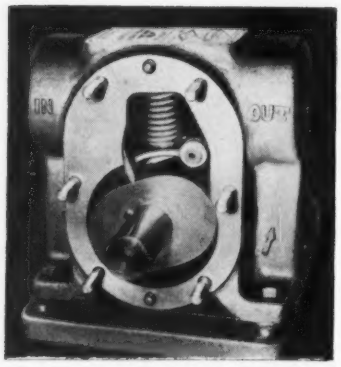

## Efficiency, Versatility Cited For New Rotary Pump

Simplified construction of this new rotary, positive-displacement pump offers highly efficient operation with products ranging from volatile gases to viscous pie fillings and cherries.

Known as "Twin Lobe," it has only three moving parts: Two lobes keyed at right angles to each other on a single shaft; and a pair of spring tension arms providing a seal between suction and discharge. They also clean the lobes after each revolution.

In operation, each lobe draws in new material with every 180 deg. of shaft rotation. Unit delivers larger volumes at slower speeds for savings in horsepower, and smooth, uniform flow is maintained at metering accuracy. There are no gears or meshing teeth that might damage foods, while use of stainless steel and special alloys curbs corrosion and abrasion.

Pump is available in four models for pressures to 200 psi., capacities to 56 gpm. It pulls a full vacuum and no priming is required.—*Manton-Gaulin Mfg. Co., 44 Garden St., Everett, Mass.*

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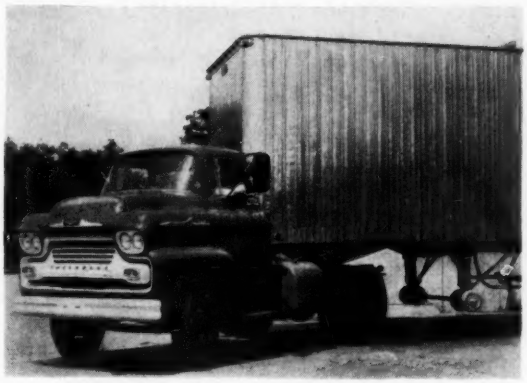
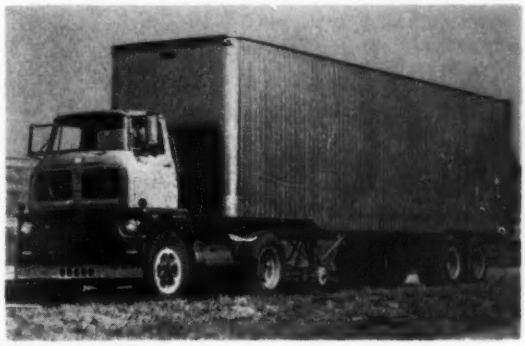


## New Styling, Power, Capacity, Safety Mark '58 Trucks

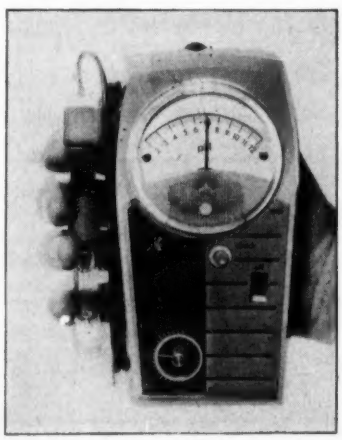
**HEAVY-DUTY** (Chevrolet) has 230-hp. V-8 engine, new front-end styling, and many chassis improvements. Designed for easier servicing, line (Spartan LCF) includes units on nine wheelbases, G.V.W. ratings to 25,000 lb.—*General Motors Corp., Chevrolet Motor Div., Detroit* (149A)

**SIX-WHEELER** (Dodge): Rated at 218 hp., unit (T700) offers increased load capacity, larger brakes, and new automatic transmission. G.V.W.: 32,000 lb.; G.C.W., 55,000 lb. Larger model (T900) has 234-hp. engine, 46,000-lb. G.V.W., 65,000-lb. G.C.W.—*Chrysler Corp., Dodge Truck Div., Detroit.* (149B)

**COE** (International truck-tractor line, having a 48-in. bumper-to-back-of-cab dimension, offers maximum payloads. Models (Sightliners) are powered by V-8 gasoline or LPG engines. They are available in three series, on five wheelbases, and with G.V.W.'s ranging from 24,000-30,000 lb. —*International Harvester Co., 180 N. Michigan Ave., Chicago.* (149C)



Circle Key Numbers on Reader Service Card



## Hand-Size pH Meter Speeds Plant, Field Quality Control

Control of pH may now be quickly and accurately accomplished with a new hand-sized instrument designed for on-the-spot readings in the laboratory, plant, or field.

Unit (Pocket pH Meter) employs a combination glass and reference electrode with convenient 36-in. lead. It may also be used while still clamped to instrument's side, which allows operator a free hand to make notations. Typical applications include checking pH of crackers, bread, milk, and industrial wastes and waters.

Meter is 6x3x2 in., weighs only 2 lb., and enables readings in the 2-12 range to 0.1 pH unit. Lower values can be measured by a simple adjustment. Power is supplied by six standard batteries.

Two-tone gray case is of tough acid-resistant melamine plastic and has a scratch-resistant polystyrene dial face.—*Beckman/Scientific Instruments Div., Fullerton, Calif.*

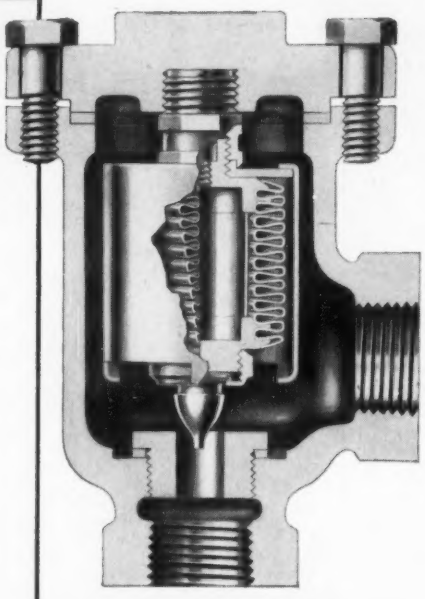
Circle 149D on Reader Service Card

Ingredients p. 177
Chemicals p. 178
Briefs p. 181
Equipment Applications p. 182

# *Proven by performance!*

## All departments agree on operating efficiency of SARCO Thermostatic Steam Trap

| | MAINTENANCE | PURCHASING | STORES |
|---|---|---|---|
| 1. **Same head and seat for 0-300 psi** — no changing of heads and seats for varying loads and pressures. | ✔ | ✔ | ✔ |
| 2. **Fewer parts to stock** — same bellows, head and seat for 0-300 psi. | | ✔ | ✔ |
| 3. **Greatest capacity per dollar cost** — 1" size discharges 9,650 lbs/hr at 10°F below steam temperature, 125 psi. | | ✔ | |
| 4. **Very compact and light** — ¾" size fits in palm of the hand. Weighs only 3¾ lbs. | ✔ | | |
| 5. **Freeze-proof**—wide open, self-draining when cold. | ✔ | | |
| 6. **Only one working part** — the thermostatic element. Can be inspected or replaced in few minutes without moving trap from line. | ✔ | | |



**SARCO**

*Balanced Pressure*

**THERMOSTATIC STEAM TRAP**

Same seat and head
for all pressures to 300 psi

•

Sizes ½" to 2"

•

Write for Bulletin 250

# *Proven by testing!*

**Steam-tested** — every single Sarco Thermostatic is steam-tested at rated maximum pressure.

**Proven "on-the-job" performance** — maximum fatigue-resistance for every thermostatic element is assured by Sarco's exclusive helical corrugating process and fatigue testing method.

**Quality Control** — every step of manufacture under exacting tests and controls . . . in Sarco's own plant.

# *Proven by experience!*

*During past 40 years, over 1,000,000 Sarco Thermostatics have been installed in countries throughout the world!*

**Only Sarco Makes All 5 Types**

**. . . that's why Sarco can give impartial advice on trap selection**

Thermostatic Steam Traps

Liquid Expansion Steam Traps

Thermodynamic Steam Traps

Float-Thermostatic Steam Traps

Camlift Bucket Steam Traps

**Sarco Company, Inc., 635 Madison Avenue, New York 22, N. Y.**

AN AFFILIATE OF SARCOTHERM CONTROLS, INC.

2212-B

***STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS • HEATING SPECIALTIES***

## High-Density Evaporator Controls Solids to ½%

High-solid concentrates may be efficiently produced in a new continuous evaporator that controls product density to ½%. Typical items handled include tomato paste, and apple or peach concentrates.

Unit (Znerk, Model EDF) has four principal applications: (1) Raising the solids content of pre-evaporated products; (2) evaporating heat-sensitive materials; (3) processing extremely viscous items; and (4) concentrating foods to be dried to a powder or flake.—*Oscar Krenz, Inc., Berkeley, Calif.*

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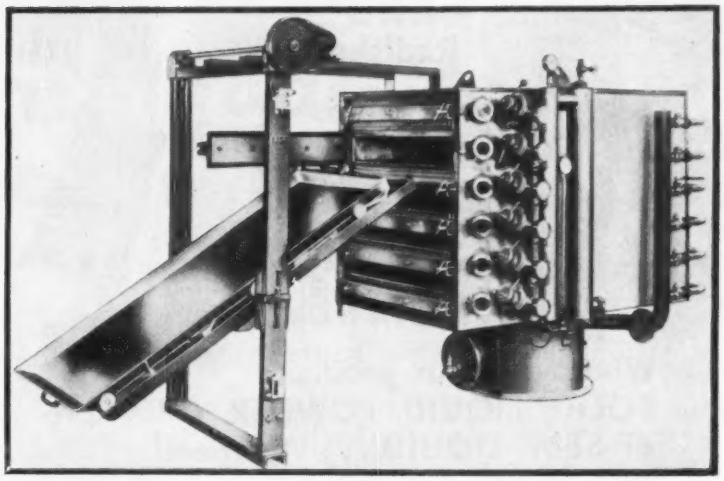

## Compact Shelf Dryer Gives Rapid Evaporation

Designed for heat- and oxidation-sensitive products, this semi-continuous shelf dryer reportedly speeds evaporation in the 35-90 C. range. Furthermore, it is operated by one man.

Evaporation with free water at 90C is 5 lb. per sq. ft. per hr., and at 60 C., 2¼ lb. Steam consumption: 1.1-1.3 lb. per lb. water evaporated.

Known as Model C-51-6, it has six independent compartments, thus material may be dried in one while other compartments are being loaded. A 29-in. Hg vacuum usually can be obtained within 5 min. of closing the door.

Dryer has jacketed trays (3x6 ft.) employing sub-atmospheric steam. In addition, steam and hot water are used in spaces between compartments. Machines are available with all contact parts of stainless steel, or part stainless, part mild construction.

An electrically-operated tray elevator enables rapid loading and unloading.—*Calmi Engineering Co., Ltd., Terminal Bldg., York St., Toronto, Ont., Canada.*

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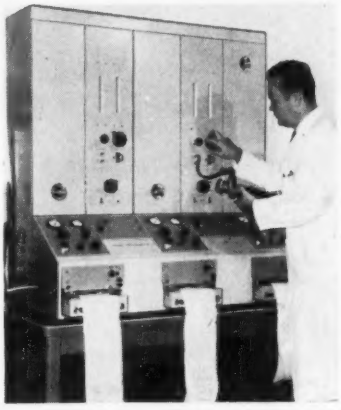

## Vapor Fractometer Makes 3 Simultaneous Analyses

This triple-stage vapor fractometer is designed for single-run analysis of samples containing a large number of components which fall over a wide range.

Unit takes three rough cuts of a total sample without need for pre-separation, and makes three simultaneous analyses under optimum chromatographic conditions. It allows fast and accurate analysis of material such as hydro-carbon mixtures ($H_2$ — $C_5$ and $C_1$ — $C_{18}$) and high-boiling glycols in low-boiling alcohols. By using three different column substrates, unit permits total separation of $C_3$ —$C_6$ saturates and unsaturates.

Instrument can be used for low-, medium-, or high-temperature work. —*Perkin-Elmer Corp., of Norwalk, Conn.*

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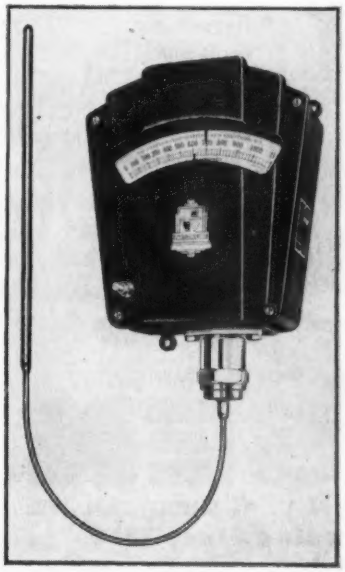


## Guards Equipment Against Temp-Control Failure

Cooking kettles, smoke houses, and other automatic food-processing units may be protected against control failure with this new instrument.

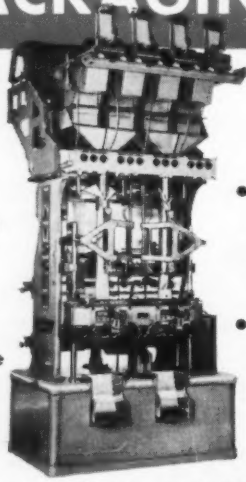
Unit (Model HL 15-10), a high-limit mercury-actuated control, is designed for fast action in the 0-1,-100 F. range. Operating independently of process-temperature controls, it cuts off the heat supply if preset temperature is exceeded.

Instrument dial shows exact operating temperature being maintained, thus providing a second check on regulating controls. It can also be used to actuate an alarm system.

The control circuit employs a manually reset snap-acting switch. A second switch in series with the first offers fail-safe operation. It is normally closed, but opens if temper-

**Whatever your product: SOLID, LIQUID, POWDER or SEMI-LIQUID . . . you need the all new completely automatic**

# COMPAK
## COMPLETE PACKAGING



- Forms the Package from Roll Stock
- Fills the Package to Exact Measure
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ature drops below the lowest expected ambient figure.

Unit is cased in a dust-tight aluminum die-casting, finished in black. A wire seal can be attached to prevent unauthorized persons from tampering with control settings.—*Partlow Corp., 503 Campion Rd., New Hartford, N. Y.*

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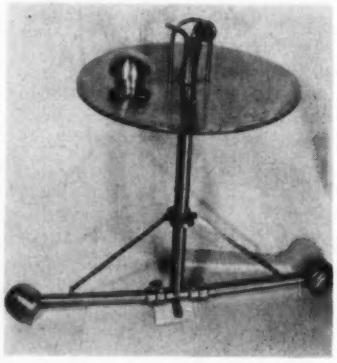

### Spray Unit Automates Cleaning of Tankers

This simplified spray-ball unit with collapsible arms automates cleaning of tankers up to 20 ft. long.

Known as Bulk Pick-Up Tank Washer, it is easily handled (weighing about 35 lb.) and made of stainless steel with sanitary construction throughout. There are recessed gaskets on the distributing arm, and a wide rubber gasket under the cover plate.

The removable cap of each ball is drilled for proper coverage of all interior surfaces. A locking handle holds the balls in position, extended or folded.—*Klenzade Products, Inc., Beloit, Wis.*

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## INGREDIENTS

### All-Vegetable Frying Fat Has Many Advantages

Said to be the first frying medium specifically developed for restaurant and institutional frying, this all-vegetable product also offers important advantages to the food processor.

Designated Frymax, it combines the best properties of oils and shortenings. For quick and easy handling,

# New possibilities for continuous processing!

## ...with Foxboro sanitary proportional flow control

Foxboro Magnetic Flow Meter . . . transmits flow measurement to recorders or controllers.

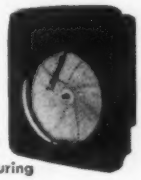
You no longer have to discard new ideas in continuous process design for want of adequate flow control! Foxboro now provides the first complete sanitary proportional flow control system ever available.

Heart of this system is the Foxboro Magnetic Flow Meter. It has proved highly successful in measurement of widely varied food products including beer, tomato products, apple juice, and grape juice. And it's equally applicable to many others, such as egg yolks, wine—even molasses! It measures *magnetically*, with no flow interference, no pockets, crevices, or projections to collect residue or contamination. And its high accuracy is sustained, despite variations in conductivity, density, and viscosity.

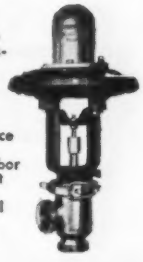
The Dynalog Controller and the Saniflo Valve complete the system . . . offer a complete sanitary control "package". Send us your flow control problem. Write **The Foxboro Company, 301 Neponset Ave., Foxboro, Mass., U.S.A.**

A complete, sanitary proportional flow control package

**Foxboro Magnetic Flow Meter.** Accurately measures the flow of virtually any liquid except non-conductors like chocolate, fats and oils. Installs easily in the line like any equivalent length of pipe. No taps, seals, purges, meter runs, or straightening vanes required. Connects by 2-conductor cable to remote Dynalog Controller.



**Foxboro Dynalog Recording Controller.** Responds instantly to changes in volume flow, initiates fast, accurate valve action to hold pre-set rate. Troublefree, stepless measuring circuit has no slidewire — requires no standardizing or batteries, practically no maintenance. Control action can be air-operated or electric-operated.



**Foxboro 2-way Saniflo Control Valve.** A streamlined valve for liquids, suspensions, viscous or pulpy materials. Equally effective for throttling (proportional) or open-and-shut control. One-piece stem and plunger — no threads or crevices to harbor bacteria. Quick-disconnect clamp for easy cleaning. Can be replaced in control system by other type valve or a pump to meet process requirements.

FOXBORO
REG. U.S. PAT. OFF.

**SANITARY FLOW CONTROL**



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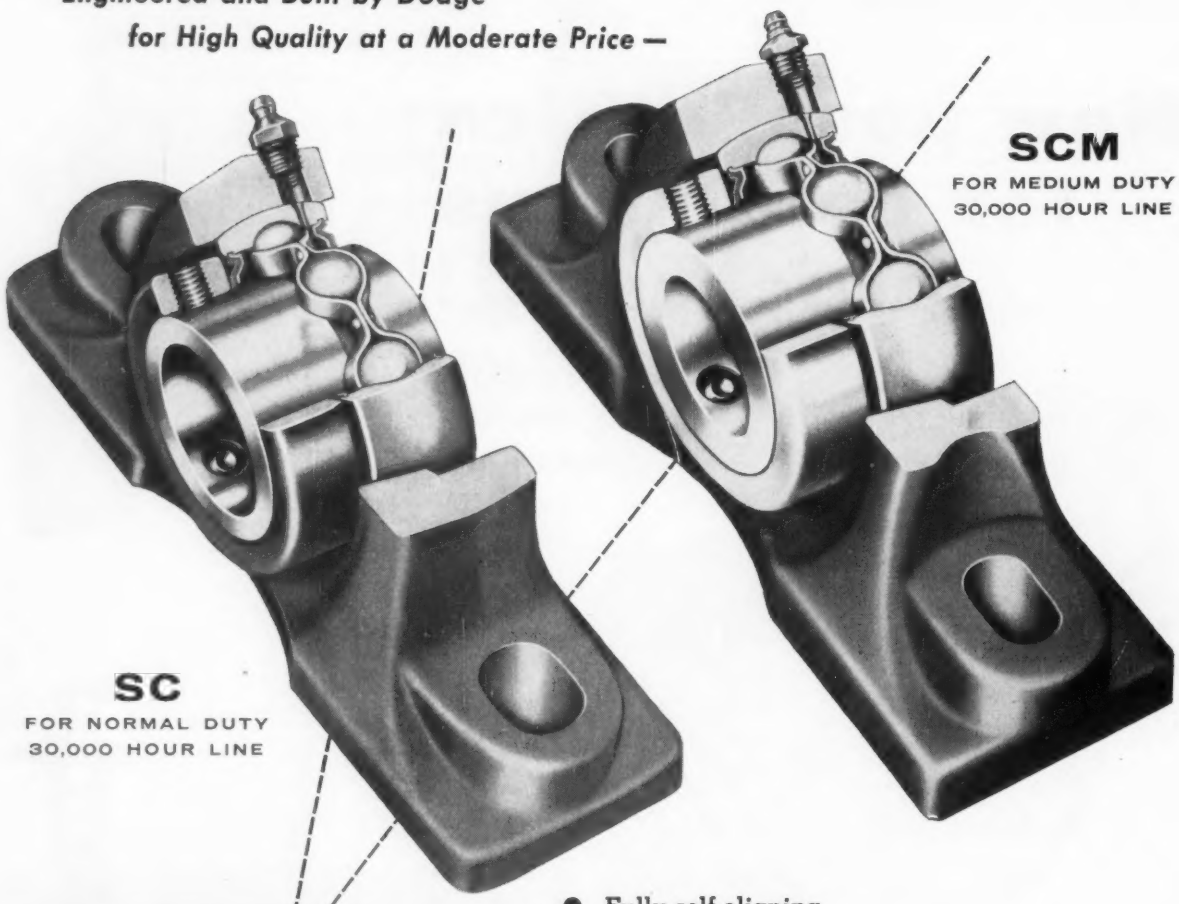
*Engineered and Built by Dodge*
*for High Quality at a Moderate Price —*



**SCM**
FOR MEDIUM DUTY
30,000 HOUR LINE

**SC**
FOR NORMAL DUTY
30,000 HOUR LINE

# The Seal *Won't Blow!*

- Fully self-aligning.
- Rugged one-piece housing.
- Fully assembled and pre-lubricated at the factory.
- Sealed both on and off the shaft.
- Metallic backed synthetic rubber seals keep lubricant in, dust and dirt out. Engineered to stay put—*the seal won't blow!*
- Pillow block and flange cartridge types.
- Available from distributor stocks—SC in shaft sizes from 3/4" to 2-7/16"; SCM from 1-7/16" to 3-7/16".
- Write for bulletin complete with tabular data, engineering drawings, dimensions, weights, and radial load ratings.

Call the Transmissioneer, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Machinery" in your classified telephone directory, or write us.

**DODGE MANUFACTURING CORPORATION**
**2800 Union Street, Mishawaka, Indiana**

**DODGE**
*of Mishawaka, Ind.*

it pours like an oil. Incorporating an exclusive ingredient (Metsil), it gives maximum frying stability and curbs excessive smoking, gum formation, and foaming. In addition, the product imparts superior appearance and eating qualities to fat-fried foods.

It is available in 5-qt. cans for portion control, and in 435-lb. drums.—*Procter & Gamble Co., Gwynne Bldg., Cincinnati.*

Circle 152B on Reader Service Card

### Special Soy Proteins Boost Quality of Many Foods

Nutrition and flavor of cereal products, meats, and soups may be economically boosted when fortified with new specially-processed proteins.

Known as "Toasted Soy Proteins," they supply essential amino acids, are low in fat and fiber content, and have excellent stability. Toasting imparts a delicate flavor unlike that usually associated with soy products. It is barely detectable and can easily be submerged by other food ingredients.

Products are available in four granulations ranging from flour to coarse grits.—*General Mills, Soy Bean Div., Minneapolis.*

Circle 155A on Reader Service Card

## CHEMICALS

### FDA-Approved Insecticide Extends Crop Protection

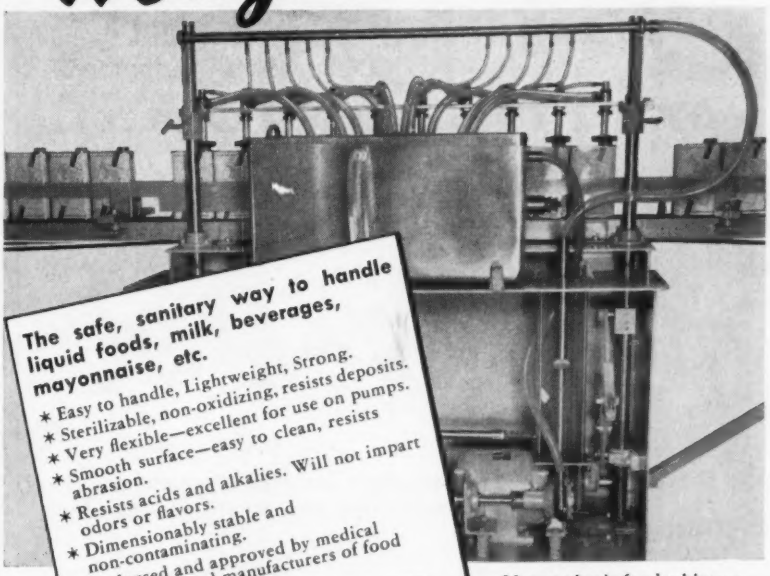
Tolerances have been established by FDA for a new insecticide said to protect a wide variety of crops, in most cases up to the day before harvest.

Called Phosdrin, it is an organic phosphate that quickly kills insects, then rapidly decomposes into harmless compounds. Used in conjunction with longer-lasting insecticides, this product offers growers full-season protection.

The material is highly toxic to man, thus safety precautions must be rigidly observed. However, these precautions concern only persons handling the insecticide. There is no danger to those working with or eating the crop after a stated time interval has elapsed.

Crops that may be protected in-


Mayon CLEAR, NON-TOXIC VINYL FOOD TUBING



The safe, sanitary way to handle liquid foods, milk, beverages, mayonnaise, etc.

* Easy to handle, Lightweight, Strong.
* Sterilizable, non-oxidizing, resists deposits.
* Very flexible—excellent for use on pumps.
* Smooth surface—easy to clean, resists abrasion.
* Resists acids and alkalies. Will not impart odors or flavors.
* Dimensionably stable and non-contaminating.
* Endorsed and approved by medical authorities and manufacturers of food processing equipment

Available ⅛" thru 2½" internal diameter

Mayon plastic food tubing as used on the Biner Ellison Straightline Vacuum Filler.

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# Super-Det

Here is a new, superior detergent designed especially for the food industry. It has everything you want in a cleaning compound.

**FAST WETTING-OUT.** The secret behind the extra-fast cleaning power of Oakite Super-Det is its extra-fast wetting-out action. This is what insures a quick loosening of the most stubborn, sticky, greasy or baked-on soils . . . makes possible a speed-up of maintenance cleaning throughout the plant.

**SAFETY.** Power-packed though it is, Oakite Super-Det is completely safe on all types of metal and equipment . . . on rubber, plastic, linoleum . . . and as safe to the hands as the soap in your bathroom.

**VERSATILITY.** Engineered for the food industry, Oakite Super-Det is especially effective in removing fats, oils and greases . . . baked-on proteins . . . dairy residues . . . typical soils in bakeries, breweries, canning and meat-packing plants.

**RINSABILITY.** No problem of streaking or filming here. Even if a solution of Oakite Super-Det is allowed to dry down, it rinses streak-free and bright – in warm water or cold, hard water or soft.

**LOW COST.** To make an effective cleaning solution, it takes only ½ to 1 oz/gal. of Super-Det. One ounce does the work of two . . . and one cleaning dollar does the work of two. Biggest saving, of course, is time.

For more details on new Oakite Super-Det, call your local Oakite man or write to Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

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## Equipment & Supplies

clude apples, peaches, pears, plums, strawberries, tomatoes, beans, peas, potatoes, cucumbers, cabbages, and broccoli.—*Shell Chemical Corp., 50 W. 50th St., New York City.*

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### Corrosion-Resistant Paint Ups Plant Sanitation

High light reflectivity and resistance to moisture and corrosion are advantages cited for a coating easily applied to metals, wood, and cement.

Product (White Rustrem) goes on smoothly with brush or spray to impart an attractive protective finish. In dairies or bakeries, it also provides a sanitary surface with greater light reflectivity for improved working conditions.

Material is generally applied without a prime coat. Deteriorated metal surfaces can often be painted without sand blasting or excessive wire brushing. Coating is available in 1-gal. cans, 5-gal. pails, and 55-gal. drums. —*Speco, Inc., 7308 Associate Ave., Cleveland.*

Circle 156A on Reader Service Card

## BRIEFS

**Potent Ultra-Violet Lamp,** designed for heating and air-conditioning ducts, offers nearly 100% kill of bacteria, virus, and molds. Unit (Sterilamp, G10T5-½) is 14¾ in. long. Rated life for hot-cathode type is 7,500 hr.—*Westinghouse Electric Corp., Box 2278, Pittsburgh.* (156B3)

**High-Capacity Centrifuge** permits economical cold-separation of milk, 10,000 lb. per hr. at 40 F. Machine (Model MN-9004-C) eliminates need for pre-heaters and coolers, also gives high-viscosity cream. Skim is foamlessly discharged under pressure of built-in centripetal pump. Cream flows out by gravity through an enclosed spout with sanitary ferrule.—*Centrico, Inc., Englewood, N. J.* (156C)

**Heavy-Duty Disintegrator** enables sanitary coarse-breaking, crushing, or shredding of tough, bulky materials. Optional discharge orifice plates permit rigid size control. Machine (Sanitary Prebreaker) has hinged construction exposing crevice-free in-

*Corrosion Resistant Valves*

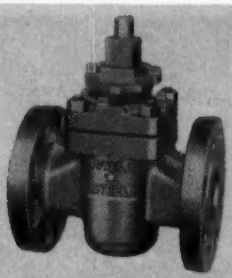

Fig. 1559—Steel Lubricated Plug Valve for 200 W.O.G. Screwed gland type. 6" and larger valves can be furnished for gear operation.

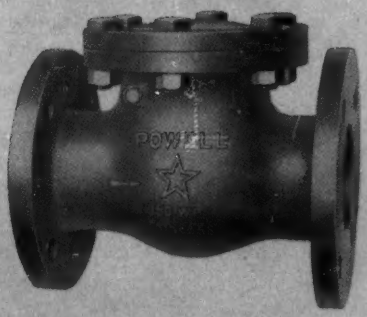

Fig. 2433SS—Large size Stainless Steel Swing Check Valve for 150 W.P. Bolted Cap.

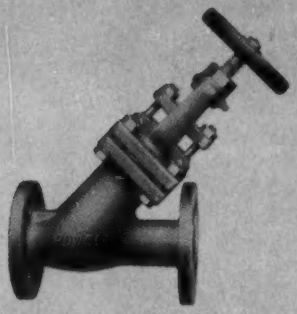

Fig. 2107—Stainless Steel "Y" Valve for 150 W.P. Plug type disc. Face to face and end flange dimensions conform to latest standards.

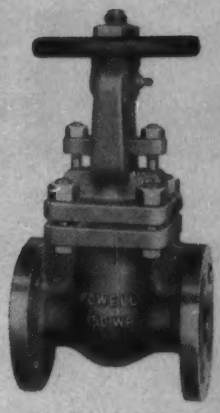

Fig. 2491—Stainless Steel Gate Valve for 150 W.P. Outside screw rising stem and yoke, solid wedge disc. Can be supplied with interchangeable split wedge disc.

Fig. 2194—Small Ni-Resist O.S. & Y. Gate Valve for 225 W.O.G. Larger sizes, flanged end, and swing check valves in Ni-Resist also available.

Fig. 1893—Large O.S. & Y. Gate Valve for Paper Mill Service. 3% Nickel Iron Body, bonnet, yoke; stainless steel stem, screwed-in seat rings; Ni-Resist wedge.

Fig. 1832—Stainless Steel Gate Valve for 200 W.P. Screwed-in bonnet, inside screw rising stem, solid wedge disc.

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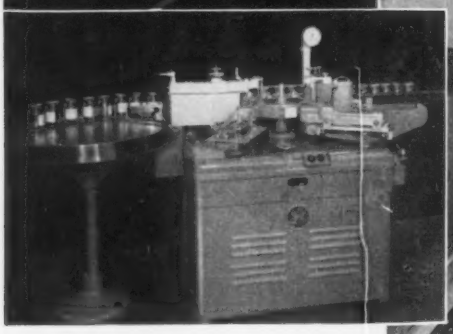
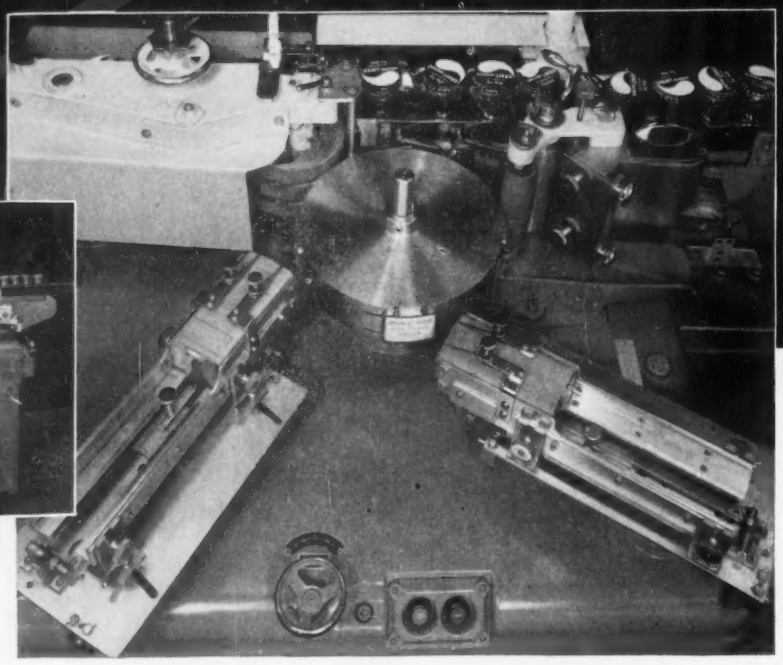
# DESIGNED FOR TOP SPEED APPLICATION

## *on round containers*





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Operating on an all mechanical, constant motion principle, these machines speed the labeling operation through their simplification of design and their own uniquely direct method of application.

A helical intake feeds and spaces the containers which travel straight through on a platform chain conveyor.

From a vertical gluing roll a uniform film of adhesive is transferred to segments of a glue cylinder. These glue faced segements then "pick off" labels from the reciprocating magazines. The glued labels are directly transferred to the containers by means of a rotating transfer cylinder. The containers then roll between pressure belts and a stationary pad which properly "wipes" down each label.

Straight through without stop or pause — that's the answer to the Lightning Labeler's (1 and 2) smooth, uninterrupted delivery of containers with accurately registered, smoothly adhered labels. If your container is round, the Lightning's a machine you you should look at, by all means!

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***PNEUMATIC** ***Packaging and Bottling Equipment***

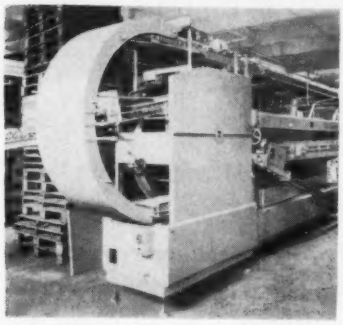
terior for rapid, easy cleaning.—*Rietz Mfg. Co., W. Chester, Pa.* (156D)

**Roof-Cooling Nozzle** gives wide coverage to cut installation costs. Operating at 10 psi., brass unit (RC-1) covers 300 sq. ft. per gal. per min. Absence of internal parts and small orifices minimizes clogging.—*Bete Fog Nozzle, Inc., 309 Wells St., Greenfield, Mass.* (159A)

**Miniature Spray Nozzle** cleans tank-truck compartments (up to 12 ft. long) having top openings too small to permit use of standard equipment. The 2½-in.-dia. unit (Spray-O-Mat) is available on a rental basis. Consisting of a hydraulically propelled rotary head slotted for 3-dimensional spray, it delivers 40 gpm. of cleaning solution at 60 psi.—*Oakite Products, Inc., 19 Rector St., New York City.* (159B)

Circle Key Numbers on Reader Service Card

## EQUIPMENT APPLICATIONS



### High-Speed Uncaser, Sorter Keeps Can Fillers Supplied

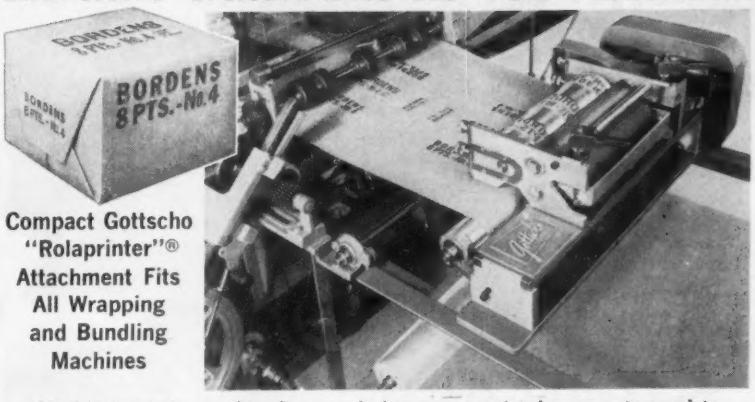
Automatic uncasing and sorting of empty 12- and 16-oz. beer cans assures steady flow of undamaged tins to fillers at Heidelberg Brewing Co., Tacoma, Wash.

Handling up to 500 cases per min., the equipment (RCA Can Uncaser and Sorter, Radio Corp. of America, Camden, N. J.) delivers cans in single file and with open ends upright. Former manual unpacking of cases required two men.

In operation, filled cartons enter the uncaser's semi-circular chute from an overhead conveyor, as a plow opens their side flaps and folds them back. Cases are inverted and cans


*Now... an efficient, economical way to*

**IMPRINT WRAPPERS AS YOU PACKAGE**




**Compact Gottscho "Rolaprinter"® Attachment Fits All Wrapping and Bundling Machines**

Ideal for imprinting anything from a code-date on a preprinted wrapper to complete display copy on 5 sides of a bundle overwrap. Fully automatic . . . requires no attention during operation, synchronizes with parent machine at regular production speeds . . . provides accurately positioned imprint. A miniature flexographic printer, the ROLAPRINTER attachment uses fast-drying liquid inks of any color and stick-on rubber type or dies. Assures consistent quality on all *films, foils* and *papers*. Mechanically simple . . . copy changes and adjustments for different wrapper sizes can be made quickly by untrained personnel. Models available to imprint areas from 1" to 24" wide.

*For complete information please submit details of your requirements, including make and model of wrapping machine.*

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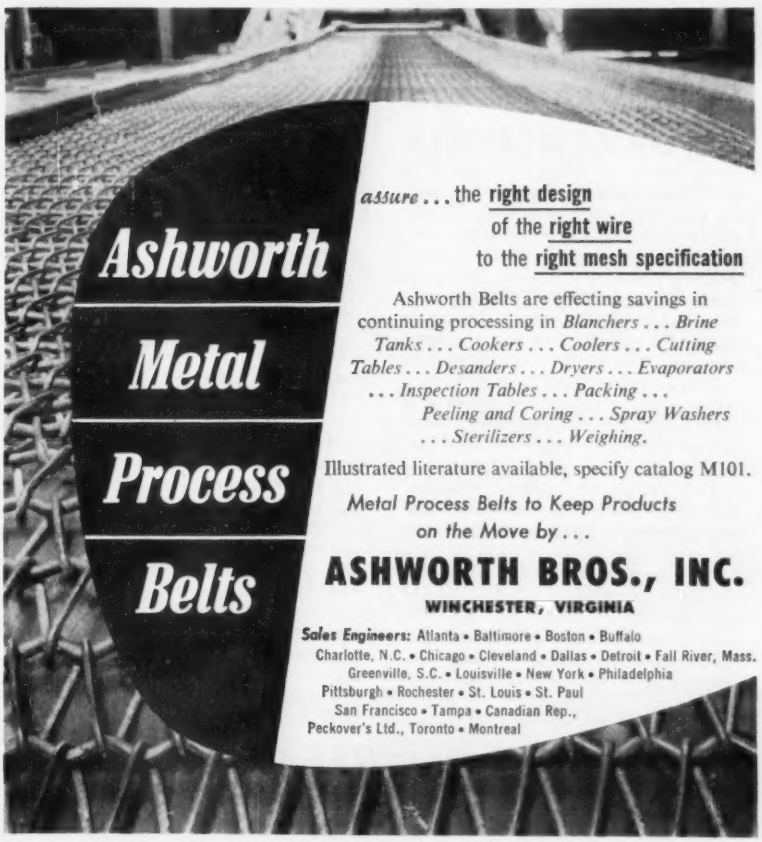
*Automatic Production-Line*
**CODING, MARKING, IMPRINTING MACHINES**



**Ashworth Metal Process Belts**

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Ashworth Belts are effecting savings in continuing processing in *Blanchers . . . Brine Tanks . . . Cookers . . . Coolers . . . Cutting Tables . . . Desanders . . . Dryers . . . Evaporators . . . Inspection Tables . . . Packing . . . Peeling and Coring . . . Spray Washers . . . Sterilizers . . . Weighing.*

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BERLIN-CHAPMAN
Sterilizer

Widely used by the largest food packers in the country . . . usually set up in a battery of 4 or 5 for one line of food at 120 cans per minute . . . made in three sizes to hold thirty, twenty, or fifteen cases of tall cans . . . equipped with one cage, one cage truck and one set of 95 trays . . . all shells tested to 40 lbs. hydraulic pressure for working pressures up to 20 lbs. Also ASME code stamping. Write today for complete information and recommendations of sizes to meet your plant setup.

OUR 50th YEAR
BERLIN CHAPMAN CO.
Berlin, Wisconsin

**Other Berlin Chapman Products**

Vertical Retorts • Brine and Pulp Tanks • Belt Conveyors • Shaker Graders • Rod De-Watering Reel • Rotary Washers • Scalders • Blanchers • Separators • Special Machinery for Food Processing.

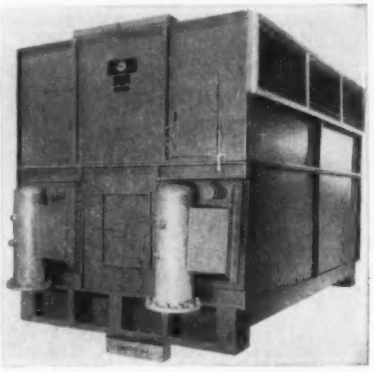
**REDUCE OPERATING COST of VACUUM SYSTEMS with this "AERO" (air-cooled) VAPOR CONDENSER**

With free air the cooling medium, you use the least water, evaporated in the air stream. You save the cost and pumping of large volumes of condensing water.

Air-vapor subcooling reduces mixture evacuated from the system, saving in the operation of steam ejector or vacuum pump.

This air-cooled condenser gives you more capacity than other types at a substantial saving of steam and power. Water supply, scaling treatment and disposal problems are eliminated.

You get pure condensate, an improved product; often profit by recovery of residues now wasted. There can be no contamination of your product at any time; it never touches raw water. Condensing, of water, of solvents or of your product, is simplified; you have one, compact, easily maintained unit replacing both cooling tower and barometric or surface type condenser.



*Niagara Aero Vapor Condenser Panel Casing construction gives access to all parts, saves first costs in shipping and installation.*

Maintenance expense is low. Niagara Aero Vapor Condenser Panel Casing construction gives access to all parts, saves first costs in shipping and installation. Summer-winter dampers and Balanced Wet Bulb Control provide precise, year 'round adjustment of capacity to load.

Constant temperature, uniform products and maximum production 12 months a year are assured. Capacities up to 15 million BTU/hr.

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## *Equipment & Supplies*

drop into a bin below. Empty cartons are then gripped by a revolving drum and discharged to a conveyor.

Cans in the bin are picked up by a rubber-covered conveyor, knocked flat, and transferred to the sorting section by an elevator belt. After being assembled single-file, tins are aligned with respect to open ends by the combined actions of a magnetic pulley and an air jet. Finally, aligned cans are discharged through a twister.

Circle 159C on Reader Service Card

### Sanitary Conveyor Belts Cut Maintenance 50%

Offering superior resistance to warm cooking oils, vinyl conveyor belts have cut maintenance costs 50% at Frito Co., Los Angeles.

Units (Koroseal, B. F. Goodrich Co., Akron, Ohio) carry oil-bathed corn chips from oven to packaging stations. They are easily cleaned with a damp cloth and detergent. Food particles cannot grind into the belt's polished surface, and the flexible material does not support bacterial growth.

Employed at Frito are two main supply belts (120 ft. long, 3 ft. wide, 3-ply construction), 24 feeder lines (10 ft. long, 2 ft. wide), and eight packaging belts (30 ft. long, 6 in. wide).

Circle 160A on Reader Service Card

### Frozens' Quality Protected By Flexible Refrigeration

Engineered for maximum flexibility and automatically controlled, four rotary compressors guard 15,000,000 lb. of frozen foods at Merchants Refrigerating Co.'s new warehouse at Vinita Park, Mo. In addition, units serve 10 blast-freezer tunnels handling 100,000 lb. a day.

Comprising the low-stage of a two-stage refrigeration system, these compressors have a combined capacity of 380 tons (−20 F. suction and 33.5-psi. discharge pressure). Units (Freezing Equipment Sales, Inc., York, Pa.) are direct-connected to 75-hp. motors operating at 700 rpm.

Controlled by an electronic alarm and shutdown system, they can operate at ⅓, ⅔, or full load to provide flexibility for daily or seasonal load variations.

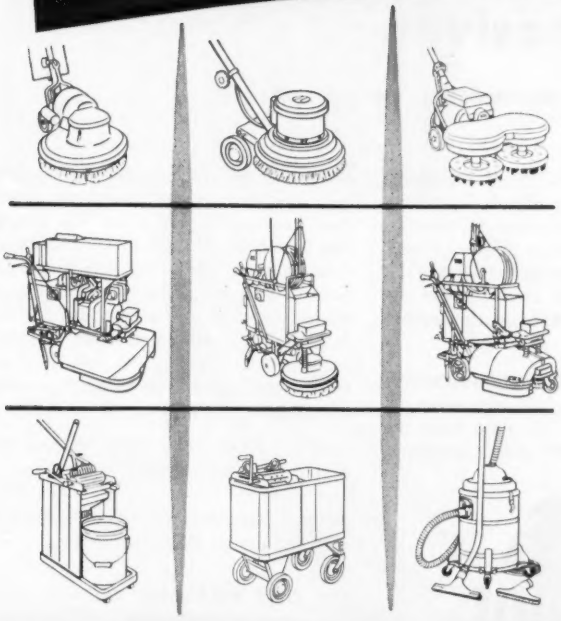
Circle 160B on Reader Service Card

# Keep your floor-maintenance men happy . . .

## with *Job-Fitted* EQUIPMENT!

**Choose from the COMPLETE *Finnell* Line**

**More than a score of models and sizes permits selection of the equipment that's exactly right for your job!**



However much a maintenance man may want to do a good job, and at the same time show savings in labor costs, he's *stymied* if the machine is too small, or too large, or is otherwise unsuited to the job. Different floors and areas call for different care and equipment. That's why *Finnell makes more than a score of floor-maintenance machines.* From this complete line, it is possible to choose equipment that is correct in size as well as model . . . that provides the maximum brush coverage consistent with the area and arrangement of the floors.

*Finnell* offers *Conventional Polishing-Scrubbing Machines* in both concentrated and divided-weight types, each in a full range of sizes . . . a *Dry-Scrubber,* with self-sharpening brushes, for cleaning grease-caked floors . . . *Combination Scrubber-Vac Machines* for small, vast, and intermediate operations, including self-powered as well as electric models . . . *Mop Trucks* . . . a *Wet and Dry Vacuum Cleaner,* in baked enamel or stainless steel, with 1½ hp By-Pass Motor. In addition, *Finnell* offers a full line of fast-acting *Cleansers* for machine-scrubbing . . . *Sealers* and *Waxes* of every requisite type . . . *Steel-Wool Pads* and other accessories — *everything for floor care!*

In keeping with the *Finnell* policy of rendering an individualized service, *Finnell maintains a nation-wide staff of floor specialists and engineers. There's a Finnell man near you* to help solve your particular floor-maintenance problems . . . to train your operators in the proper use of *Finnell Job-Fitted Equipment and Supplies* . . . and to make periodic check-ups. For consultation, demonstration, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 5701 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

**FINNELL SYSTEM, INC.**

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Everything FINNELL for Floor Care

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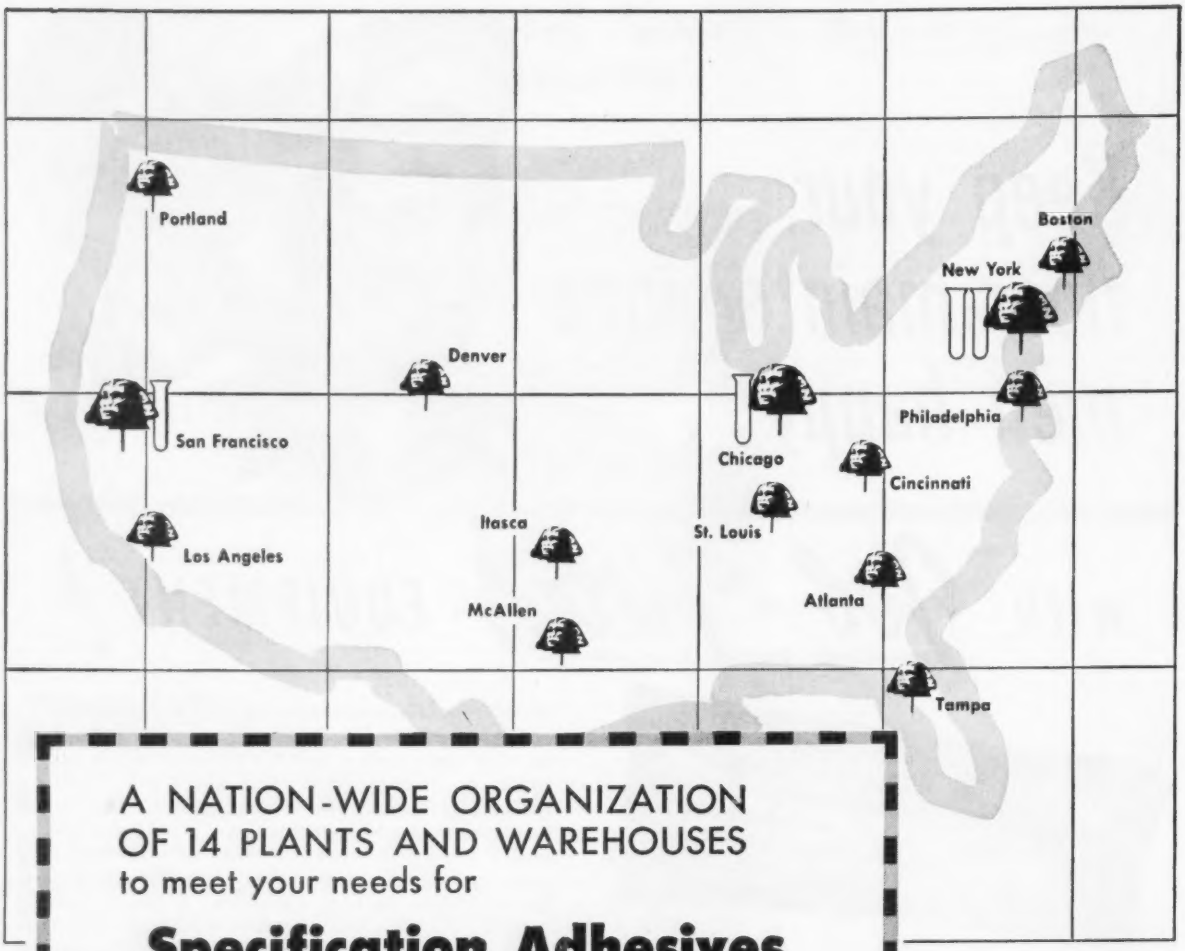


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The adhesives used in the making, labeling, packaging or shipping of your goods are *vital* supplies. More than this, adhesives are *specified* for varying requirements—and are rarely interchangeable. This is why ARABOL'S network of plants and warehouses is of great importance to you.

14 ARABOL plants and warehouses supply specification adhesives, blanketing your locations whether you are regional or coast-to-coast. Among these outlets are three laboratories, servicing the current adhesion requirements of our customers. In addition, a separate New York Laboratory is advancing the performance of adhesives in pure research.

These facilities of ARABOL protect your supply of specification adhesives despite floods, tornadoes, economic difficulties, or other interruptions in delivery from any one outlet. The next nearest ARABOL plant or warehouse is always ready to supply the same formula, to unvarying specifications.

We operate in the belief that no adhesive is worth its cost if it fulfills only a part of its requirements. The ultimate value of adhesives far outweighs their immediate cost, and specification adhesives cost only fractions more (sometimes less) than "make-do" adhesives. We would like to submit samples of specification-formulated adhesives for you to test in your own plant, under your particular working conditions, until you find the formula that best meets each of your requirements. That is the one kind of testing that assures you of continuously satisfactory results.

May we send you a folder, "How To Buy Adhesives," listing 23 basic specifications that let you know when you have the right adhesives? Kindly address your inquiry to Department 83.

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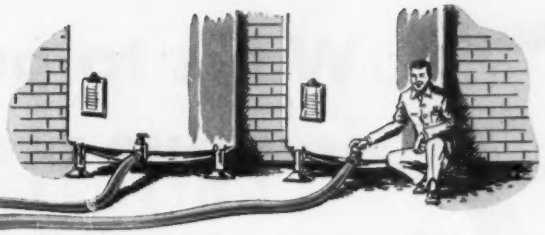

IN THE LABORATORY

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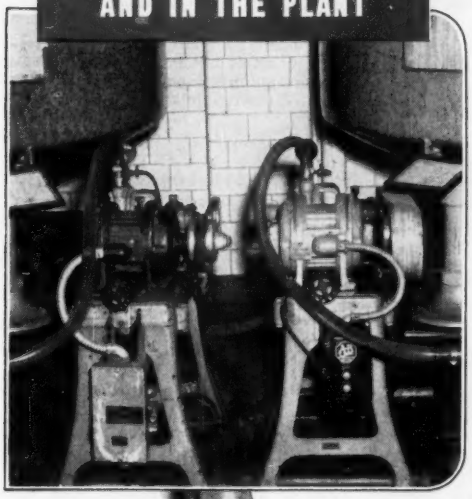

Flavor-sensitive liquid foods retain all their purity and flavor when piped through Tygon Flexible Plastic Tubing. There is no contamination — no metallic flavor pick-up. Tygon is completely safe for foods because it is chemically inert, non-toxic and resistant to all food acids and alkalies. This has been proven in use in scores of food processes. Small wonder that

## FLAVOR-SENSITIVE LIQUID FOODS ARE SAFELY "PIPED" THROUGH TYGON TUBING

leading authorities everywhere have approved Tygon Tubing for use with food products.

This versatile piping medium provides faster, low cost installation too, because it may be installed in long continuous runs without joints or couplings. Flexible, it easily adapts to any layout, and its glass-like clarity provides instant visual inspection of flow at any point. The polished bore, plus the absence of joints and sharp turns, eliminates clogging (especially in the case of semi-solids) and increases flow rates. Even cleaning is easier: Tygon lines may be disassembled, cleaned or steam sterilized—and reassembled in minutes!

Fifty-five bore sizes (1/16" to 2" I.D.) accommodate virtually every plant or laboratory requirement. Simple clamp fittings make for fast, easy coupling and special types of Tygon are available for special service such as vacuum or pressure work.

Write today for your copy of Bulletin T-97, Tygon Flexible Plastic Tubing.

PLASTICS AND SYNTHETICS DIVISION

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# 7 Ways to put more profit in your production plans

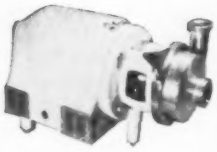
With all costs rising, now is the time to make every last penny of your production dollar work harder. We can help you to do it—with efficient production-and-profit boosting CP equipment specifically engineered and built to cut your production costs!

## NEW Swept Surface HEAT EXCHANGER

**Provides Economical CONTINUOUS Heating and Cooling of LIQUIDS or SEMI-SOLIDS—including ultra-H.T.S.T. Pasteurizing**

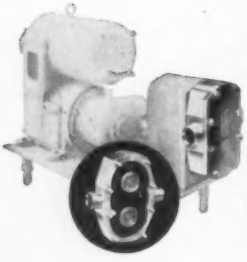
Available with one to 4 cylinders mounted on a single frame. (Ammonia or Freon models one or two cylinders only.) Housed in stainless steel.

Lowers cost of continuous heating and cooling of liquids and semi-solids; also ultra-H.T.S.T. pasteurizing. Cools to —30° F. or heats to 300° F. or higher. Heat exchange is uniform and efficient for entire run because Displacer-Mixer Blades continuously sweep product away from heat transfer surface. This increases heat exchange efficiency and reduces product losses from "burn-on" during heating. Ideal for all heavy bodied products that can be pumped. Write for Bulletin E-1300.



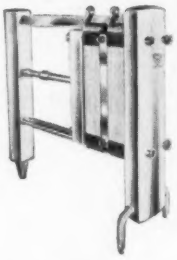
**Sanitary Centrifugal Stainless Steel Pumps**

Ruggedly built to reduce maintenance costs with special emphasis on economical fast cleaning. Can be dismantled without tools. Complete range of sizes and capacities to match the pump to the job—buying exactly what you need saves you money and operating cost. Pump both product and cleaning solution. Write for Bulletin H-1200.



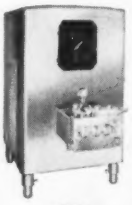
**ROTARY Pumps Sanitary, Positive Type**

New rotors with specially designed resilient surfaces. Parts can be replaced *on the job* in ten minutes or less when necessary. The perfect pump for metering flow of medium to high viscosity liquids. Write for Bulletin H-1290.



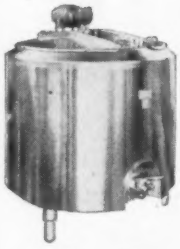
**Crescent Plate Heat Exchangers**

Cut gasket maintenance to less than half! Every plate a heat exchanger, only every other plate gasketed. Compact, stainless steel units save space and speed production. Meet U.S.P.H. sanitation standards. Can be continuous heater, cooler, H.T.S.T. pasteurizer or a combination of all three. Easy cleaning reduces costly wash-up time. Write for Bulletin E-1153.



**New Stainless Steel Multi-Flo Homogenizers**

Complete new line for smoother, more efficient homogenization at lower pressure. Reduces power costs and machine wear. Includes revolutionary, high-capacity 5-cylinder model.



**Processing Tanks**

Maximum efficiency and durability helps you cut costs, whatever you process. Standard models for heating with steam or water, cooling with water, freon or ammonia. Various types of agitators to fit the specific product. Write for full information!

**Refrigeration**

Double savings: compact design saves valuable space—extra rugged construction saves maintenance. Choose exactly what you need from a complete line of Compressors and Boosters—and get the *extra* benefits that come from CP's generations of experience in building refrigeration systems serving many industries—and serving them well. Write for Bulletin V-18.

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**CREAMERY PACKAGE MFG. CO. OF CANADA, LTD.**
**267 King Street, West, Toronto 2B, Ontario**

# JUST OFF THE PRESS

## PLANT ENGINEERING

### Belting Catalog

Describes new power transmission belting made of polymer and chrome tanned leather. 8 p.—*Extremultus, Inc., New York City. (165A)*

### Drying System

Illustrates and blueprints the Heil Ardrier, a direct-fired, 3-pass, rotary drum flash unit. *Bulletin No. ARD-52408, 4 p.—The Arnold Dryer Co., Milwaukee. (165B)*

### Polyvinyl Chloride Pipe

Specific information on characteristics of PVC pipe. Catalogs properties, applications, and installation data. 30 p.—*A. M. Byers Co., Pittsburgh, Pa. (165C)*

### Freezing System

Fact filled bulletin illustrates and details types of freezers such as open tunnel, conveyor-track, blizzard unit, etc. *Bulletin No. 147-D, 12 p.—Frick Co., Waynesboro, Pa. (165D)*

### Overload Protector

Data sheet on how "Tork-O-Stat" overload protector works, how to use it, models, types, dimensions. 1 p.—*Machine Accessories, Inc., Minneapolis. (165E)*

### Feed Control

Describes new electronic unit that controls flow of solids or liquids to processing machines. 4 p.—*Load Star Corp., St. Louis. (165F)*

### Power Transmission

Contains complete information on Zero-Max variable speed reducer.—*Bulletin 7¼ MO 856, 12 p.—Revco, Inc., Minneapolis. (165G)*

### Processing Apparatus

Compact and informative booklet shows use of various types of continuous processing apparatus in the food and chemical industries. 14 p.—*Votator Div., The Girdler Co., Louisville. (165H)*

### Dry Feeders

Systematic description of a new dry chemical feeder. *Technical Publication No. TP-9-M, 4 p.—Wallace & Tiernan Inc., Belleville, N. J. (165I)*

### Filter-Separator Unit

Factual bulletin on the RECO 15-gpm. filter-separator, contains check list of 49 liquids which can be continuously cleaned by the unit. *Richmond Engineering Co., Richmond, Va. (165J)*

### Pressure Controls

Condensed catalog discusses nine basic types of temperature and pressure controls. 12 p.—*Powers Regulator Co., Skokie, Ill. (165K)*

### Sanitary Fittings

Illustrates, gives dimensions, and describes 30 specific types of APV Para-Seal fittings. *Form PS 9-57, 12 p.—APV Co., Inc., Buffalo, N. Y. (165L)*

### V-Belt Drives

Manual on selection and operation on Dodge V-belt drives contains sections covering standards, variable speed and special drives, sheaves, V-belts, bushings and hubs. Includes engineering drawings, exploded views, tables and other data. *Bulletin A661, 108 p.—Dodge Mfg. Co., Mishawaka, Ind. (165M)*

### Wrought Iron Heating Coils

Selection data and suggested piping arrangement for heavy duty steam heating coils. Diagrams and descriptions included. *Catalog 1715, 12p.—Westinghouse Sturtevant Div., Boston. (165N)*

### High Speed Oven

Describes new Belgium-made oven said to produce better biscuits with shorter baking time and at reduced cost. 4 p.—*J. W. Greer Co., Wilmington, Mass. (165O)*

### Stainless Tubing

Comparative price data and analysis details of 33 seamless stainless grades of pipe and tubing. *TDC 188. Babcox & Wilcox Co., Beaver Falls, Pa. (165P)*

### Quick Couplers

Data on 11 quick couplers in sizes from 1¼ to 6-in. *Bulletin F-42, 2 p.—OPW Corp., Cincinnati. (165Q)*

### Steam Heating Coils

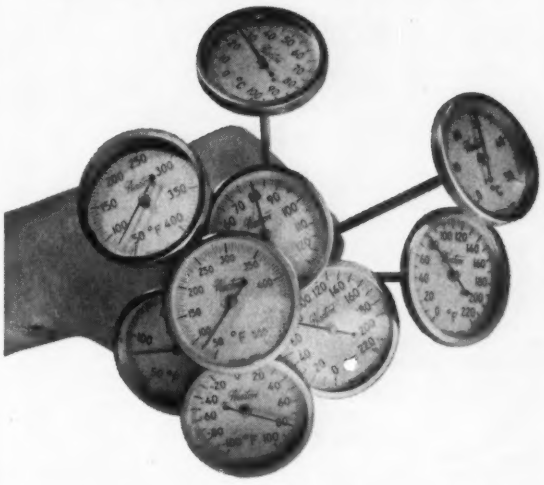
Pictures and describes commercial and industrial coils, provides piping diagrams and many performance and selection tables. Booklet B-1710, 26 p.—*Westinghouse Sturtevant Div., Boston. (165R)*

### Centrifugal Fans

New catalog on complete line of centrifugal fans contains selection charts, block dimensions and fan arrangements. *Catalog 1121, 9 p—Sturtevant Div., Westinghouse Electric Corp., Boston. (165S)*


*Modern concept in*

# TESTING THERMOMETERS



*Rugged . . . Accurate . . . Convenient for laboratory and equipment needs*

For laboratory needs, for production testing and inspection, for equipment mounting . . . wherever high sustained accuracy and quick response are essential . . . WESTON all-metal thermometers have been widely adopted because they are more convenient to use, and far more durable and economical. Cases and stems are of 18-8 stainless steel – standard stem length 8" – 2" to 24" length available on order – dials 1¾" dia. – ranges from low as –100F to high as +500F. Require only 2" immersion in solids or liquids. Accuracy ½ of 1% of thermometer range. For the complete story, including data on all-metal thermometers for industrial use, write now for bulletin T-13. Weston Electrical Instrument Corporation, 614 Frelinghuysen Avenue, Newark 5, N. J. A subsidiary of Daystrom, Incorporated.

**Precision POCKET THERMOMETERS**

Dials 1" dia.—spike stem 5" long—18-8 stainless steel construction—ranges as low as –40F to high as +500F—accuracy ½ of 1% of thermometer range.

**General Purpose THERMOMETERS**

Dials 2" dia.—18-8 stainless steel construction—ranges as low as –100F to high as +1000F – accuracy 1% of range.

**Model 2282**—standard stem length 8" including hub.

**Model 2281**—stem lengths 2½"-4"-6"-9"-12"-18"-24" including threads.

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they like best
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SPRAY NOZZLES
To improve product quality and lower spraying costs, Spraying Systems offers the advantages of advanced design and better performance. Typical applications include mixing, washing, cooling and spray drying. We also offer spray nozzles to meet unusual conditions such as high abrasion or extremely fine atomization.
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ADVANCED SPRAY NOZZLE DESIGN
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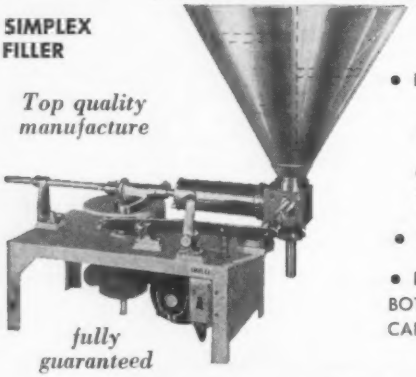
# This inexpensive filler does your filling job!

**SIMPLEX FILLER**

*Top quality manufacture*



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- ADJUSTABLE 1 TO 32 OZ.!
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- FILLS 15 OR 30 BOTTLES, JARS OR CANS PER MINUTE!

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## Just Off the Press

### Drum Warmer

Fact sheet gives information on new automatic drum warmer. Specifications and price sheet attached. *Form DW-53/9—Harold L. Palmer Co., Detroit. (166A)*

### Pumps

Describes and gives specifications on new model sand and slurry pump. *Bulletin 601, 4 p.—Krogh Pump & Equipment Co., Inc., San Francisco. (166B)*

### Steam Generators

Bulletin contains photos from film strip, general specifications of steam generator. *Bulletin 406, 8 p.—Vapor Heating Corp., Chicago. (166C)*

### Gages and Valves

Condensed catalog illustrates standard and special gages and valves. *Catalog No. 305, 8 p.—Jerguson Gage & Valve Co., Burlington, Mass. (166D)*

## PACKAGING

### Checkweighing Machines

Data sheet on selectrol automatic checkweighing machines. Form No. 3347, 2p.—*The Exact Weight Scale Co., Columbus, Ohio. (166E)*

### Handling Cartons

Poster (22x30 in.) illustrates 14 points in good handling of paraffined food cartons.—*Paraffined Carton Research Council, Chicago. (166F)*

### Bag Making Machine

Covers simplex 24-75 fully automatic, poly side-weld bag-making machine. 4p.—*FMC Packaging Machinery Div., Oakland, Calif. (166G)*

### Scales

Describes full line of Shadowgraph scales for check weighing. Form 3333, 8p.—*The Exact Wright Scale Co., Columbus, Ohio. (166H)*

## MATERIALS HANDLING

### Fork Truck Upright

Foldout brochure gives specifications, describes, illustrates operations of 3-section, telescoping upright for fork trucks. *8 p.—Clark Equipment Co., Buchanan, Mich. (166I)*

### Torque Converter Drive

Power shift torque converter drive for fork lift trucks is described with the aid of illustrations and cutaway views. *Bulletin No. 465, 6 p.—Allis Chalmers Mfg. Co., Milwaukee (166J)*

### Cotton-Nylon Belting

Condensed bulletin gives advantages strength, and prices of cotton-nylon belting. DM-585, 4p.—*Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, Ohio. (166K)*

### Bucket Elevators

Data sheet gives detailed design and operating data on new bucket elevators. *Bulletin No. BEB-101, 2 p.—Carpo Mfg. Co., Jacksonville, Fla. (166L)*

### Nestaway System

Describes new system for handling bread and baked goods from wrapper to consumer. *8 p.—Mid-West Metallic Products, Inc., Cleveland. (166M)*

### Conveyor Systems

Pictorial bulletin on use of conveyors in many industries, particularly in the handling of bulk sugar. *Form No. 138-57—J. C. Corrigan Co., Boston. (166N)*

### Box Car Loader

Describes new carloading conveyor unit with adjustable end section. 4p.—*Ottumwa Box Car Loader Co., Ottumwa, Iowa. (166O)*

### Adjustable Ramps

Covers company's line of hydraulic dock leveling devices with capacities from 10,000 to 20,000 lb. 8p.—*Rowe Methods, Inc., Cleveland. (166P)*

### Lift Trucks

Details design, construction and operating features of new lift trucks. 4p.—*Towmotor Corp., Cleveland. (166Q)*

### Free Literature—Fast Way

**Any of these very-latest catalogs, bulletins, or folders will be sped to you gratis. Just note here the specific literature you want, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service postcard — back of book. Then sign at the bottom and mail.**

**For your convenience, too, all items in this department are listed and keyed in the Reader Service Section.**

# They look like twins... but one is synchronous

**Louis Allis "SYNCRO-*SPEDE*"* offers... for the first time... a synchronous motor in the same frame sizes as a standard induction motor**

New from Louis Allis — *the most compact and efficient synchronous induction motor on the market* ... the revolutionary "Syncro-Spede." It's the *only* synchronous motor built in standard NEMA frames for comparable ratings in any enclosure.

The space-saving "Syncro-Spede" has no external excitation, wound rotating fields, collector rings or brushes—offers simplified control and low-cost operation. And it's virtually maintenance-free.

In performance, "Syncro-Spede" delivers and maintains exact synchronous speed within its rated capacity, regardless of load variations or voltage dips. When "Syncro-Spede" motors of several different ratings are powered by a single adjustable-frequency source, their acceleration, running speed, and deceleration can be synchronized.

"Syncro-Spede" is the low-cost answer to such demanding synchronous applications as *precise adjustable-frequency multi-motor systems*... high-frequency generator drives and constant-speed conveyor drives . . . precision timing and metering devices . . . recording instrument drives . . . any system requiring constant speeds from no-load to full-load.

"Syncro-Spede" sizes range up to 100 hp. For information and expert application engineering assistance, contact your nearby Louis Allis District Office or write directly to The Louis Allis Company, 442 East Stewart Street, Milwaukee 1, Wisconsin.

*"Syncro-Spede" is a trademark of the Louis Allis Co.

**LOUIS ALLIS**

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES

# Emery NEWS

## WEIGHING SYSTEM

BIN, TANK AND HOPPER EDITION No. 7

Covering design, development and application data on Emery Weighing Systems for industrial applications

# ENGINEERS AT PARKE, DAVIS & CO. ADOPT NEW CONCEPT OF TANK WEIGHING IN BROMINE PROCESSING PLANT

## *SPECIAL CONDITIONS IN BROMINE STORAGE AND WEIGHING AREA PROMPTED SELECTION OF EMERY LOAD CELLS.*

In selecting weighing apparatus for a bromine storage and process system at its Holland, Michigan, plant, Parke, Davis & Company engineers were faced with an interesting set of factors which led to the eventual choice of a relatively new concept in process control . . . tank weighing instead of measuring tank contents. Emery Hydraulic Load Cells were selected to handle the weighing job.

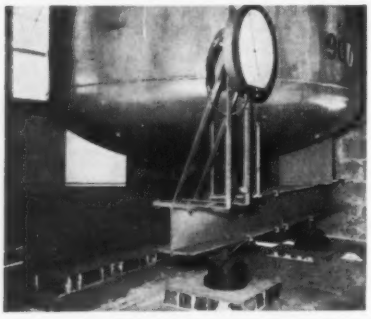


**Fig. 1. Close-up view of the bromine storage tank showing how Emery Load Cells support the front end while the back end is carried on a 21" I-Beam.**

The process required weighing of bromine in both storage and in process. Liquid bromine is pumped from the storage tank to an elevated intermediate tank where the required amount for use in the process is weighed. Excess bromine in the weigh tank is drained back to the storage tank. The system is vented through a fume scrubber.

The corrosiveness of bromine liquid and vapor dictated that an external gauging system be used. The lead lining of the storage tank precluded the use of gauging systems using radioactive sources. Compressed air of the necessary pressure was not available for weighing equipment using air as a motive force. The possible damage to beam scales by the corrosive action of chemicals and fumes was a deterrant to the use of this equipment. Equipment utilizing an electrical signal would have to be explosion-proof or remotely located from the hazardous area. Thus, Emery Hydraulic Load Cells were selected.

Two EC-30 Emery Cells support the storage tank in front; the back end being carried on a 21" I-Beam. The Emery 16" Indicator is set directly in front of the tank.

The weigh tank is suspended on a sling and linked to an overhead support through another EC-30 Emery Load Cell. A 21" dial indicator is located at floor level at which point the pump control is operated to fill the weigh tank with the required amount of liquid bromine which is then forwarded to the point of processing.

In specifying Emery Load Cells in this bromine weighing application, Parke, Davis & Company found that the peculiar conditions surrounding this particular installation were easily met by an Emery tank weighing system.

**Fig. 2. Emery Dial Indicator for weigh tank is conveniently located above pump control. Operator can fill weigh tank to exact weight, then shut pump off.**

If you face conditions of a similar nature . . . or if you have a tank weighing problem of any kind, our engineers will gladly study it and make recommendations. Be sure to send for our Bulletins 561 and 571.

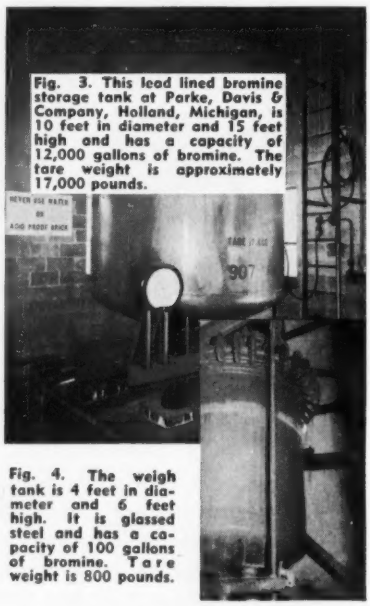


**Fig. 3. This lead lined bromine storage tank at Parke, Davis & Company, Holland, Michigan, is 10 feet in diameter and 15 feet high and has a capacity of 12,000 gallons of bromine. The tare weight is approximately 17,000 pounds.**



**Fig. 4. The weigh tank is 4 feet in diameter and 6 feet high. It is glassed steel and has a capacity of 100 gallons of bromine. Tare weight is 800 pounds.**

### *Tank Weighing Data*

*Our Bulletins 561 and 571 are filled with technical data on tank, bin and hopper weighing; the arrangement of cells and instrumentation; and the new approach to tank weighing through the results you need. If you have not received your copies send for them today.*

PRECISION SINCE 1872 — THE A. H. EMERY CO. — FORCE MEASUREMENT

THE A. H. EMERY COMPANY

Pine Street • New Canaan, Conn.

## Just Off the Press

### MAINTENANCE

**Maintenance Chart**

Three color chart (19 x 24-in.) contains information for Rockwell-Nordstrom lubricated plug valves. 1 p.—*Meter & Valve Div., Rockwell Mfg. Co., Pittsburgh. (169A)*

**Maintenance Finishes**

Discusses use and properties of a line of epoxy finishes. 4 p.—*Hauger-Beegle Associates, Inc., Chicago. (169B)*

**Electrical Insulator**

Describes electrical insulating properties of silicone rubber. Form 9-105, 4 p.—*Dow Corning Corp., Midland, Mich. (169C)*

**Gear Pump**

Data sheet on new sealed gear pump for circulation of lubricant. No. 57D, 2p.—*Bijur Lubricating Corp., Rochelle Park, N. J. (169D)*

**V-Belt Handbook**

Gives complete cross-reference information on V-belts for every type or make of unit. 24 p.—*Industrial Div., Dayton Rubber Co., Dayton. (169E)*

**Resistant Finishes**

Describes line of fungicidal paints. 4 p.—*Fungicidal Products Co., Forest Park, Ill. (169F)*

**Floor Scrubber**

Illustrates self-propelled auto-scrubber floor machines. 4 p.—*American Floor Machine Co., Toledo. (169G)*

**Protective Coating**

Presents properties and characteristics of a synthetic resin for coating equipment and plant. 12p.—*Mono-Seal Products, Everett, Mass. (169H)*

### QUALITY CONTROL

**Laboratory News**

Contains 4-page removable centerspread describing and illustrating Beckman pH electrodes now available for laboratories. Also portable pH meters. *Lanco Apparatus News*, Vol. 9, No. 1, 12 p.—*Arthur S. La Pine & Co., Chicago. (169I)*

**Lab Ware**

Listing of polyethylene ware for laboratories. Catalog 57-P, 16p.—*Schaar & Co., Chicago. (169J)*

**Filters**

Technical brochure on Millipore filter membranes also presents new high-strength filter. 16p.—*Millipore Filter Corp., Watertown, Mass. (169K)*

**Electrical Equipment**

Describes line of electrical heating, temperature measuring and controlling units for laboratory and industry. Catalog No. 57, 19p.—*Thermo Electric Manufacturing Co., Dubuque, Iowa. (169L)*

**Lab Sterilizer**

Treats of new hinged-door type sterilizer with full opening to accommodate large items. 4 p.—*Barnstead Still & Sterilizer Co., Boston. (169M)*

**Gas Chromatographs**

Data sheets on gas chromatographs and accessories.—*Scientific Instruments Div., Beckman Instruments, Inc., Fullerton, Calif. (169N)*

### SUPPLIES

**Insulated Clothing**

Revised catalog on newest types of clothing for freezerwear. Industry Catalogue 1957-58, 14p.—*Freezer Clothing Sales Co., Silver Spring, Md. (169O)*

**Chelating Agent**

Gives data on Sole-Onic CH-50 for use in bottle washing and label removing. TB-No. 557-1, 2p.—*Sole Chemical Corp., Chicago. (169P)*

**Silicas**

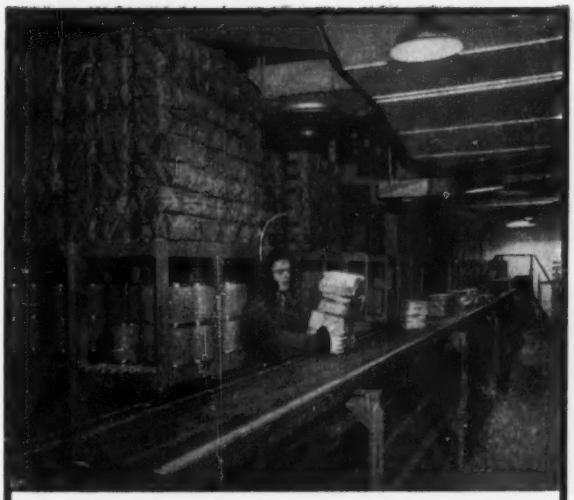
Describes new silica gels, hydro gels and other synthetic silicas. Bulletin No. MAC, 4p.—*American Industrial Chemical Co., Butler, N. J. (169Q)*

**Synthetic Safety Clothing**

Compares resistance characteristics of synthetic fabrics and films, 6p—*The Milburn Co., Detroit (169R)*

**Organic Chemicals**

Physical properties and application data on more than 350 organic chemicals including 50 new ones. F-6136, 28p.—*Union Carbide Chemicals Co., New York City. (169S)*

**KING SHARP FREEZE SYSTEMS**

*help you deliver more and better frozen foods at greater profit!*

★ Faster freezing with turbulent frigid air movement by King Systems preserves food flavor, color and texture and minimizes loss thru dessication and bacterial activity.

★ King Systems give you engineered uniform distribution of clean, cold air that eliminates frost on packages and loss from soil and "old product" appearance.

★ With space-saving features of King unit and ceiling ductwork the freezing capacity of your room is increased, permitting greater production, especially during peak periods.

★ Simple air-defrost of unit coils in a few minutes means no interruption in production schedules.

★ With all floor space available, you can adopt more efficient handling methods, speed-up inventory turnover and reduce labor costs.

★ More rapid removal of heat from products and efficient coil evaporator permit shorter compressor hours and lower power costs.

★ King Sharp Freeze Systems are specifically designed by pioneers in the air movement field for all food industry applications . . . blast freezers, freezing tunnels, cold storage warehouses, storage freezers . . . for processing, freezing or storage of meats, poultry, fish, fruits, vegetables, juices, ice cream, baked goods, candy.

*Write today for further information. Our engineering staff is at your service.*

THE King COMPANY OF OWATONNA

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# PUMP LIQUIDS GASES SLURRIES

**WITHOUT CONTAMINATION OR CORROSION**

Wavelike Motion of Steel Fingers Forces Material Through Tubing

Cap. 0.2 cc. per min. to 4.5 G. P. M.

Prices **$60.00** to **$550.00** depending on size and accessories

Write for Descriptive Literature

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22 North Main St. • Middleport, N.Y.


## *Just Off the Press*

### INSTRUMENTS

**Viscometer Handbook**

Describes, diagrams, and photographically illustrates the principles of viscometer operation and calibration. *Manual VIM 57*, 12 p.—*Brookfield Engineering Lab., Inc., Stoughton, Mass. (170A)*

**Recording Systems**

Contains descriptions, specifications and prices of oscillographic recording systems. 50M-10-57, 16 p.—*Industrial Div., Sanborn Co., Waltham, Mass. (170B)*

**Electrical Controls**

Concerns all-purpose electrical controls, suitable for use with any detectable variable. Bulletin 106, 12p. — *Assembly Products, Inc., Chesterland, Ohio. (170C)*

**Process Control**

Four bulletins covering temperature indicating, recording and controlling instruments, also pressure, level flow and pH controls. Bulletin A-801.—*The Swarthout Co., Cleveland. (170D)*

### TRANSPORTATION

**Truck Refrigerator**

Describes Coldmaster electrically powered refrigeration units for delivery trucks. 7p.—*Truck Refrigeration Division, Construction Machinery Co., Waterloo, Iowa. (170E)*

**Shippers Service Point List**

Guide to points where company's direct truck shipping service is available. Also explains special services available. 5th Ed., 16p.—*Pacific Intermountain Express, Oakland, Calif. (170G)*

**Rubber Truck Bumpers**

Has dimensions and mounting details of rubber units designed to protect truck bumpers. Bulletin 83056, 2p.—*Bumpers, Inc., Cleveland. (170F)*

**High-Low Truck Body**

Describes hydraulically-operated van that can be raised from street to loading dock level. 2p.—*Thompson Trailer Corp., Pikesville, Md. (170H)*


*Strahman* AUTOMATIC WATER-SAVER **SPRAY NOZZLE**

**Ideal for Dairy and Food Industries**

The Strahman Spray Nozzle does a better job with the least amount of water. This precision made nozzle enables the operator to get any type stream of water to do his job by simply pressing the lever. A soft spray is sent forth with slight pressure on the lever, and a strong straight stream may be had by pushing the lever all the way down. This convenient control of the wash water assures better cleaning with a lot less effort. The nozzle automatically shuts off the moment the lever is released, thereby eliminating all waste of water.

***RENEWABLE RUBBER COVER.*** The sturdy cover protects the nozzle and your equipment against knocks and dents. When the cover becomes worn, replace it with a new one.

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STRAHMAN VALVES, INC., 16 HUDSON STREET, NEW YORK 13, U. S. A.



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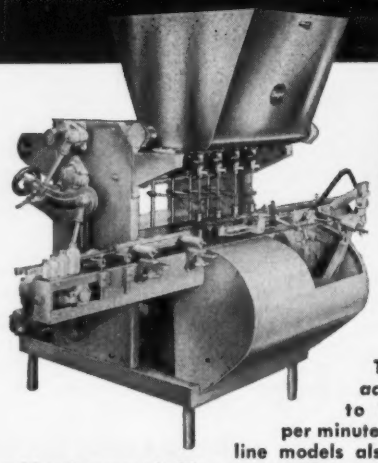

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**TYPE 19A**

**The 4 line model *accurately* fills 50 to 100 containers per minute . . . 6, 8 and 10 line models also available capable of *accurately* filling up to 250 containers per minute. Hope Type 19A Filling Machines are now in *profitable* use from coast-to-coast filling liquids, semi-liquids or viscous products in jars, plastic bottles or tin cans. For high speed, accurate filling machines look to the leader —**

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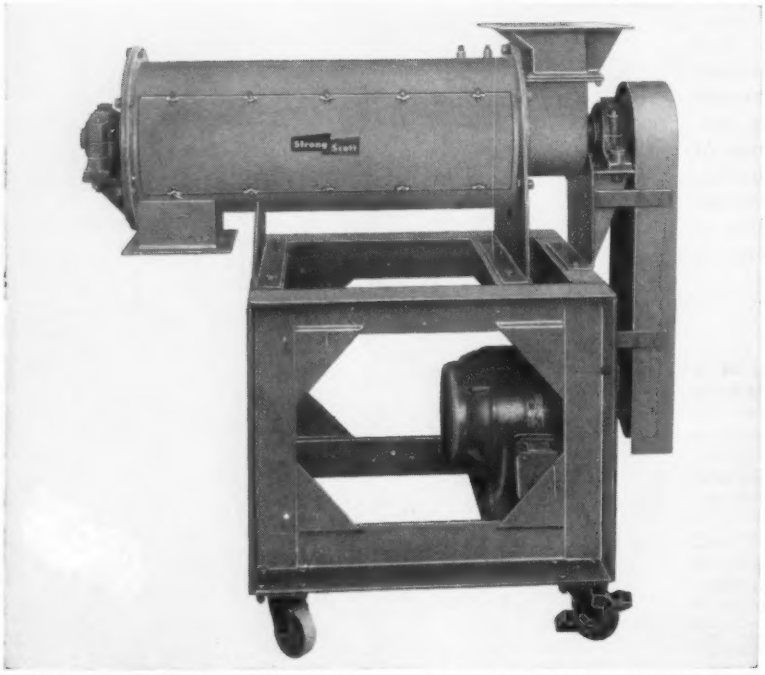
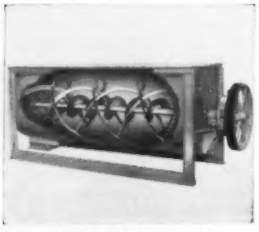
NEW PRODUCT NEWS

# NEW HIGH SPEED MIXER FOR QUALITY FINISHING

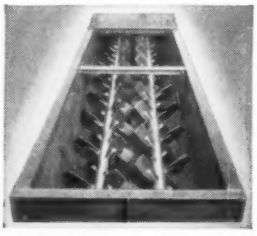


The Turbulizer produces a homogeneous mix, increases production while reducing mixing time and costs.



TRIPLE ACTION MIXER—Complete uniform blending in 2 to 7 minutes.

STRONG-SCOTT TRIPLE ACTION MIXER exposes each particle in the mixture to over 10,000 separate mixing actions per minute as it blends and folds. This produces a uniformly mixed product with 99.9% thorough distribution of minor additives.



TWIN ROTOR MIXERS—Accurate blending of liquids and dry mix at any speed.

TWIN ROTOR MIXERS are designed primarily for high percentages of liquid application to light weight ingredients, where product identity is to be maintained. A double shaft assembly with overlapping, adjustable paddles gently combine the liquids with the dry mix.

## STRONG-SCOTT TURBULIZER

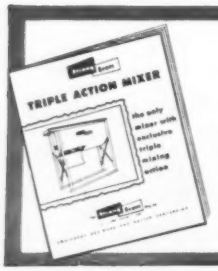
**Provides Fast, Thorough Dispersion, Disintegration and Blending of Dry Materials, or Pastes Involving Liquids and Solids.**

The TURBULIZER is a high speed, continuous mixer that will disintegrate and disperse fat pellets, chemical ingredients which have a tendency to ball or agglomerate, and other ingredients which can be broken by the paddles and thoroughly dispersed in the mixture. Product uniformity is accurately maintained as a result of high speed centrifugal forces created by the paddles.

It is also highly applicable where a fluffing action is desired on powdered material. Minor percentages of liquid may easily be added to dry mix with high efficiency and dispersion results.

The TURBULIZER is self cleaning and is built with sanitary seals at each end of the shaft. The interior is precision machined. Overlapping, adjustable paddles turn within a close tolerance to the chamber wall, providing a selective rate of material flow.

The TURBULIZER may be furnished in carbon or stainless steel and may be jacketed for hot water, steam or a refrigerant. Capacities will vary depending on the bulk density of the material and the degree of agglomerates encountered. Consult Strong-Scott for full details.




***WRITE FOR FREE COLOR BULLETIN***

*For complete information on the equipment shown above, write to The Strong-Scott Mfg. Co.*

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DEPT. FE-158

*Equipment Designed for Better Processing*

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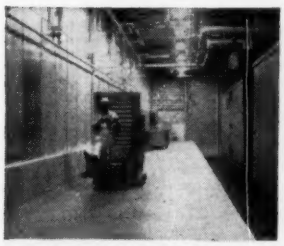
# "We find Armorply temperature control rooms are easy to assemble, give us a clean, easy-to-maintain operation"

says **STANFORD E. ABEL**, vice president,
Giant Foods, Inc., Washington, D. C.

Armorply, metal-faced Weldwood Waterproof Plywood, in large panels that are a snap to assemble in wall sections, has helped streamline Giant Foods warehousing operations. The sturdy aluminum-faced Armorply panels, which have a high impact resistance, are 100% vaporproof, will not absorb odors, are easy to clean and require virtually no maintenance. Armorply, made by United States Plywood Corporation, can be specified with faces of aluminum, stainless steel, zinc-bond steel, high-pressure laminates or other metal and plastic faces with a variety of cores. Armorply has many industrial and structural applications.

**Banana room of Armorply,** one of 12 rooms installed in the Giant warehouse. Armorply, which received full approval of the U.S. Department of Agriculture, has been used by Giant in rooms of varying temperatures – from 36° for meat storage to tropical conditions for ripening bananas. In banana storage rooms, the "air-tight fittings enable us to let the banana do most of its own work in the ripening process, using its own gases. Armorply affords us the same efficiency in temperature control either under high temperatures or refrigeration," says Mr. Abel.



**Armorply produce rooms** back on to freight sidings and truck loading platforms. Designed by V. C. Patterson and Associates of York, Penna., the Armorply rooms are expected to help Giant cut costs by centralizing its warehousing operation in one highly efficient unit. "Good temperature control is most important in the produce and meat field," Mr. Abel points out. "With Washington heat waves sometimes reaching a humid 100 degrees, we know we can count on Armorply to do the job for us."

**"Armorply rooms are quicker to put up** than the normal room of concrete, plaster, and cork," Mr. Abel says. The sturdy, modular Armorply panels never need painting, "and we can maintain the rooms vermin-free and clean at all times, which eventually will more than pay for our costs. There's no chance for dirt, vermin, or odor to enter," Mr. Abel concludes.

**Newly completed produce section** of Giant Foods' warehouse in Landover, Md. The 8-acre warehouse, when finished, will house nearly 120,000 sq. ft. of Armorply temperature control rooms for storage of meats, groceries, vegetables and fruits. The Giant chain, which has 37 stores in Maryland, Virginia and Washington, D.C., tested Armorply in one of its stores before deciding to adapt it for its new warehouse. In addition, 6 new stores "will be completely Armorply in all the temperature control boxes," Mr. Abel reports. As reconstruction of older Giant stores becomes necessary, Mr. Abel predicts Armorply will play a major part in the work. Armorply is distributed by ANNAPOLIS YACHT YARD, FREEZER BOX DIVISION, Annapolis, Md.

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# HURON* VITAL WHEAT GLUTEN

**What it is** . . . Huron Vital Wheat Gluten is a protein concentrate obtained by processing wheat flour to greatly reduce its starch content. To maintain the native vitality or elasticity of the original wheat product, it is carefully dried at low temperatures and ground to fine particle size. Huron Vital Wheat Gluten will therefore retain its ability to absorb water, and yield an elastic mass when incorporated into breads, cereals, or other processed foods. Huron Vital Wheat Gluten is sold as a light tan powder, having 75% protein on a dry basis (approximately 71% on a 6% moisture basis).

## CEREALS

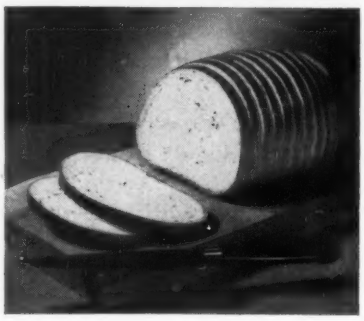
Huron Vital Wheat Gluten is used in both cooked and dried cereals, providing important functional properties and outstanding nutritional values to a variety of cereal products.

## FOOD CHEMISTRY

Because of its combination of natural elasticity and high nutritional content, Huron Vital Wheat Gluten offers food chemists a unique tool for the formulation of improved food products. Its high bonding characteristics provide cohesive structures during processing; after cooking, it affords rigid expanded structures of attractive texture, crumb, and palatability.

## BAKED PRODUCTS

Vicrum is Hercules' trademark for Vital Wheat Gluten manufactured for use in the baking industry. It is specially processed and selected to meet rigid specifications and provide high, uniform baking performance. Vicrum can be used to complement the normal behavior of flours.† It is particularly useful in improving the quality of specialty breads as measured by texture, crumb, volume, and keeping qualities. Because its addition increases the fermentation tolerance and strength of doughs, it offers greater flexibility during processing. Vicrum is in growing commercial use as a baking adjunct used at 2-4% levels, particularly in specialty breads such as rye.



*Hercules Trademark.

†*Before adding Vicrum to food products, bakers should check Federal & State Standards of Identity.*

*For full descriptive literature on Vital Wheat Gluten, call or write*

**HURON MILLING DIVISION**

*Virginia Cellulose Department*

*HERCULES POWDER COMPANY*

INCORPORATED

*Wilmington 99, Delaware*

VV58-1

*Sales Offices:* 380 Madison Ave., New York 17, N.Y. • 332 South Michigan Ave., Chicago 4, Ill. • 120 Montgomery St., San Francisco 4, Calif.

# USEFUL NEW BOOKS

## Utility *Plus* Design

BUILDINGS FOR INDUSTRY. *Published by F. W. Dodge Corp., 119 W. 40th St., New York City 18. 1957. 309 pages. Price:* $9.75.

Seventy-four selected industrial projects make up this interesting and authoritative work on trends in contemporary plant buildings.

The many problems concerned in construction of a new industrial building—getting closer to markets for material sources, providing better labor conditions, simplifying or unifying operations, housing more automatic machinery—are treated in detail. Many factors have a bearing on planning and designing and require a careful harmony of the ascetic and the purely utilitarian.

The buildings discussed in the book are those that have met the seemingly contradictory challenges partly because of the natural compatibility of contemporary architecture with basic engineering principles, and partly because of the talent of the architects, engineers, and management teams.

The projects are divided into six categories: Warehouses, light industry, consumer goods, manufacturing laboratories, utilities and service industries, and heavy industry. The book is profusely illustrated with photographs and line drawings.

## How to Handle People

MAKING MANAGEMENT HUMAN, *by Alfred J. Marrow. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York City 36. 1957. 241 pp. Price:* $5.00.

This informative new book is a guide to the use of psychology in observing and appraising people in industry, their nature and their motives, and in solving problems of their happiness and productivity on the job.

The author draws on 20 years of front-line experience including the results of practical psychological applications in studies in his own company (Harwood Mfg. Corp.). He shows what psychology actually contributes to industry, how to create in managerial staffs a greater sensitivity and an awareness of social human problems, and how people feel and why they behave as they do.

Book includes practical ways and means to create a work climate to satisfy the workers' needs. It successfully translates the language of psychology in terms of daily life in the shop and factory, enabling managers and workers alike to gain a full understanding and knowledge of human nature.

## Guide to Plant Safety

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS *By N. Irving Sax. Published by Reinhold Publishing Corp., 430 Park Ave., New York City 22. 1957. 1467 pages. Price:* $22.50.

This new volume fills a need for a convenient reference work on the hazardous properties of chemical compounds and other industrial materials to enable chemists, engineers, or non-technical personnel to find quickly whether a given compound or material is potentially dangerous and what precautionary measures must be taken.

Cleverly rewritten and expanded, the book covers over 8,500 materials.

Sections include: Toxicology, Ventilation Control, Personnel Protection to Personal Hygiene, Atmospheric Pollution, Radiation Hazards, Industrial Fire Protection, Storage and Handling of Hazardous Materials, Reactor Safeguards, Allergic Disease in Industry. Concluding the book are sections on general chemicals, shipping regulations and an index to synonyms.

## Report on Dairy Meeting

BULK MILK HANDLING. *Published by Michigan State University, E. Lansing, Mich. 1957. 132 pp. Price:* $2.00.

The proceedings of the National Conference on bulk milk handling held in May include 21 papers covering various phases in milk processing. Incorporating the latest information of changes in developments from the farm to the plant, the report sheds light on an important and growing phase of the food industry.

Sample topics include: Shifting from cans to bulk, methods of financing bulk tanks, selecting the tanks, pipeline handling of milk, advantage of company owned vehicles versus contract hauling, regulation of haulage of milk, and others.

## Booklets and Reports

PROFIT PERSPECTIVE IN ATOMIC ENERGY (*Special Report 21*). *Published by the American Management Association, 1515 Broadway, New York City 36. 1957. 176 pages. Price:* $4.75. Commercial application of atomic power on a profitable basis is discussed by scientists, engineers, and administrators.

A SECOND SURVEY OF DOMESTIC ELECTRONIC DIGITAL COMPUTING SYSTEM. (*PB 111996-R.*) *Published by U. S. Department of Commerce, Washington 25, D. C. 1957. 439 pages. Price:* $7.00. Report of engineering and programming characteristics of 103 systems.

STATUS REPORT TO MANAGEMENT ON RADIATION PRESERVATION OF FOOD (*PB 131171*). *Published by United States Department of Commerce, Washington 25, D. C. 1957. 15 pages. Price: 60 cents.* Reprint of an original document resulting from government-sponsored research.

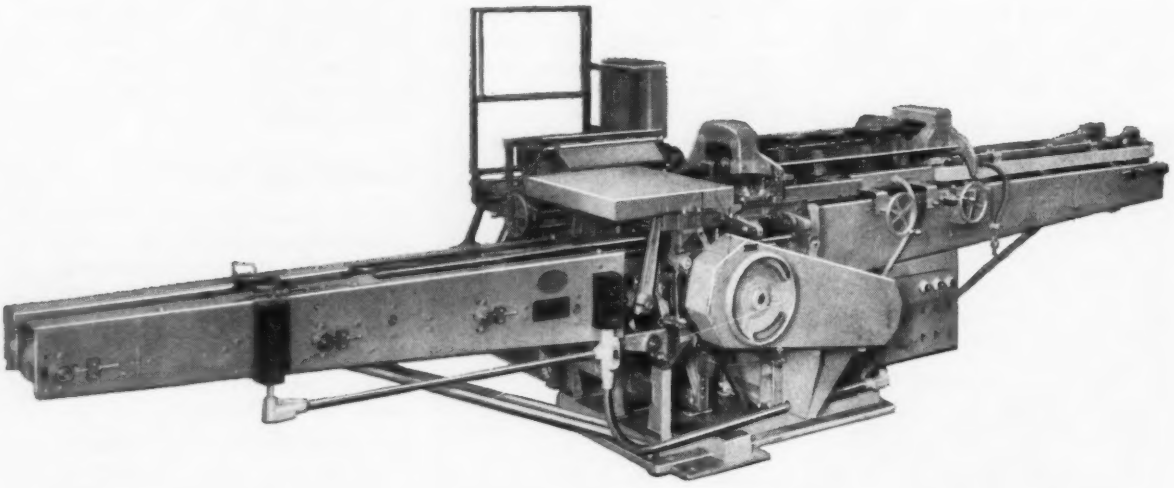
SHOULD YOUR PLANT LEASE PRODUCTION EQUIPMENT (*No. 57*). *Published by Small Business Administration, Lafayette Bldg., Washington, D. C. 1957. No charge.* Leaflet discusses six advantages of leasing production equipment. Also four major disadvantages.

MATERIALS HANDLING IN PUBLIC REFRIGERATED WAREHOUSES. (*Marketing Research Report No. 145.*) *Published by U. S. Department of Agriculture, Washington 25, D. C. 1957. 120 pages. Price: 60 cents.* Guide to operators of public refrigerated warehouses.

PRACTICAL PROGRAMS FOR COST CONTROL. (*Manufacturing Series 224.*) *Published by the American Management Association, 1515 Broadway, New York City 36. 1957. 54 pages. Price:* $1.75. Leading companies describe their workable programs for cost control.

# GET MOST ACCURATE REGISTRATION POSSIBLE

## Combined With 160-A-Minute Speed



Here's how to assure the sales appeal of neat, uniform packages, and maintain wrapping speeds up to 160-a-minute to really cut costs. In the Model FF-H, you get the finest electric-eye mechanism, capable of plus or minus 1/64" accuracy even at this top speed. Combined with slip-proof paper feed, it means you get the most accurate registration possible.

An integral, automatic feeder moves cartons through the FF-H for horizontal, straight-line wrapping. Loads are evenly distributed throughout the wrapping cycle to keep bearings and moving parts shock-free. Paper feed stops automatically when no package is fed.

Model FF-H has been engineered to give you easy operations, adjustment and maintenance. Only one operator is needed. A counterbalanced, "lift-up" transport assembly helps cut cleaning and adjustment time. To cut costs and boost your production of trim, eye-catching packages, contact our nearest office for full details on the FF-H.

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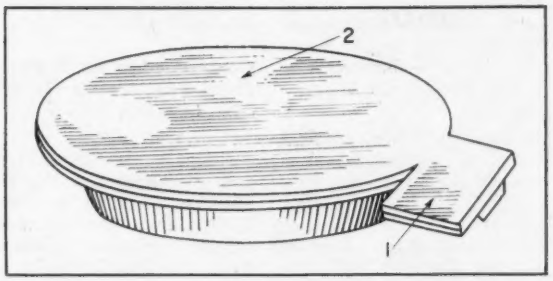
# RECENT INVENTIONS




**New Process Forms, Fills Individual Condiment Cups**

Cavities connected by indented neck portions (1) are formed in thermoplastic film, and sealed with a cover strip (2). Packets are filled successively through the necks, which are then sealed. Individual patties are stamped out along peripheral shear lines.—*F. E. Bender and L. B. Donnelly, Denver.* No. 2,813,799. Nov. 19,1957.

## PRODUCTS

**Gel-Forming Composition** Comprising Partially Demethoxylated Pectins, Sodium Hexametaphosphate, Sodium Citrate, Monocalcium Phosphate, Citric Acid—Avoset Co., San Francisco. No. 2,809,894.

**Fungicidal Coating** Consisting of Asphalt, Dithiofuric Acid Salt—Texas Co., N.Y.C. No. 2,809,897.

**Leavening Agent** Consisting of Dicalcium Phosphate Dihydrate, Sodium Bicarbonate—Monsanto Chemical Co., St. Louis. No. 2,810,650.

**White-Sauce Base** Containing White Wheat Flour, Dry Skim Milk, Oleo Oil, MSG—Armour & Co., Chicago. No. 2,811,452.

**Coated Sausage** Having Base Gelatinous Layer, Cellulosic Coating—Armour & Co., Chicago. No. 2,811,453.

**Improved Coconut Product** Made From Thin, Uncompressed Flakes—General Foods Corp., White Plains, N. Y. No. 2,812,255.

**Flavor Insert** for Drinking Straws—M. D. Scisorek, Los Angeles. No. 2,812,257.

**Dry Lemon Flavor** Comprising Crushed Dry Cereal, Citric Acid, Black Pepper—C. B. Wright, Staunton, Va. No. 2,812,258.

**Color Preservative** for Cured Meats Consisting of Sodium Ascorbate, Phosphates—Meat Industry Suppliers, Inc., Chicago. No. 2,812,261.

**Meat-Curing Brine** Employing Sodium Tripolyphosphate, Monosodium Phosphate as Solubilizer—Meat Industry Suppliers, Inc., Northfield, Ill. No. 2,812,262.

**Vegetable Oil,** for Easing Defrosting of Refrigerated Surfaces, Containing Aluminum Stearate, Propylene Glycol—Whirlpool-Seeger Corp. No. 2,812,264.

## PROCESSING

**Treating** Nut Kernels to Eliminate Rancidity Products by Vacuum-Washing Centrifuging, Heating—California Walnut Growers Assn., Los Angeles. No. 2,809,114.

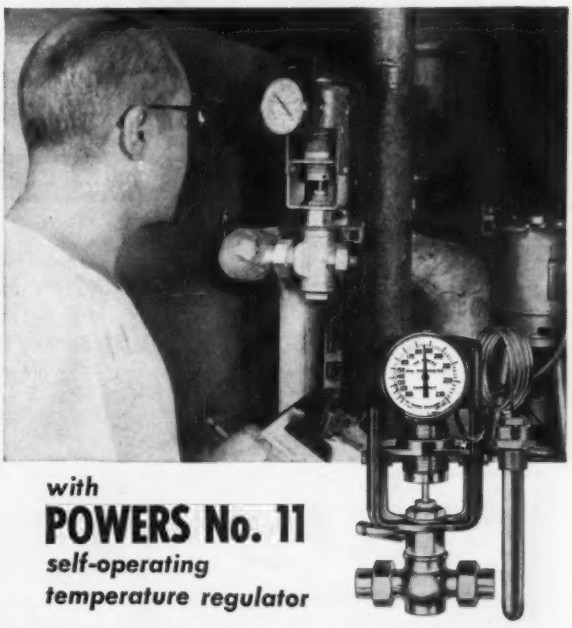
**Recovering** Amino Acids by Adsorbing on Acid-Activated Alumina, Eluting With Steffen's-Process Filtrate — International Minerals & Chemical Corp. No. 2,809,212.

**Preparing** Sugar Syrup by Continuously Dissolving Granules in Recirculating Water Stream

Want more information on any of these recent patents—if so, you may obtain detailed printed copies by writing direct to the U. S. Patent Office, Washington, D. C., giving serial numbers of those you want and enclosing 25¢ for each copy.


# VISIBLE PROOF

*of constant temperature control*



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# spice RESEARCH NEWS

## New Methods For Analyzing Spices Aid In Determining Flavor Strength

New techniques and apparatus for testing the volatile oil content of spices have been developed in a recent research project.*

Using a newly modified Clevenger trap plus new distillation procedures, researchers have been able to shorten the normal analysis time by several hours and also obtain greater accuracy.

The Clevenger trap has been changed to include a more precisely calibrated tubing and designed in two parts instead of one, so that it is possible to test oils both heavier and lighter than water with only a slight adjustment.

A reduction in distillation time is made through use of a magnetic stirrer. This allows a higher heating mantle temperature.

Use of the new methods and equipment for testing volatile oil content makes the determination of flavor strength in Natural Spices a faster, easier and more accurate procedure.

* Published in the Journal of the Association of Official Agricultural Chemists.

— • —

*Reprints of the report on this study are available from the Information Bureau, American Spice Trade Association, 350 Fifth Avenue, New York 1, New York.*

**American Spice Trade Association**


—Amalgamated Sugar Co., Ogden, Utah. No. 2,809,903.

**Improving** Casein by Adding Alkali Metal Polyphosphate Solution, Subjecting to Shearing Action — Borden Co., N.Y.C. No. 2,810,655.

**Recovering** Glutamic Acid From Acid-Hydrolyzed Protein by Acidifying the Concentrated Liquor, Heating, Separating Insolubles, Cooling, Crystallizing — Corn Products Refining Corp., N.Y.C. No. 2,810,751.

**Preparing** Grape Clusters for Wine Making by Shredding Stem and Skins, Crushing Seeds, Pulping Flesh, Separating Juice—Rietz Mfg. Co., San Francisco. No. 2,811,448.

**Slicing** Roll Clusters for Packaging—A. S. Schmidt, Harrisburg, Pa. No. 2,811,997.

**Drying** Lecithin in Turbulent-Film evaporator—Rodney Hunt Machine Co., Orange, Mass. No. 2,812,019.

**Deodorizing** Cream by Successive Countercurrent and Co-Current Contact With Steam in Vacuum Chambers—A. P. V. Co., Ltd., London, England. No. 2,812,253.

## EQUIPMENT

**Fruit Halving, Pitting Machine** —N. E. Gaddini, Winters, Calif. No. 2,808,863.

**Apple Celling** and Slicing Unit Comprising Slicing and Seed-Celling Knives, Pivoting Arm, Engaging Hand—F. B. Pease Co., Rochester, N. Y. No. 2,808,864.

**Sugar-Cane Segmentizer**— Hawaiian Development Co., Ltd., Honolulu, Hawaii. No. 2,808,865.

**Meat Grinder** Employing Drum-Like Grooved Stator, Stationary and Rotary Blades— R. T. Townsend, Des Moines, Iowa. No. 2,808,866.

**Extractor Comprising** Cylindrical Drum, Perforated Surrounding Walls, Peripheral Charging Pockets—L. J. Sisley, Seattle, Wash. No. 2,808,935.

**Box-Emptying Mechanism** for Fruit Graders—H. Kernen, Bern, Switzerland. No. 2,808,951.

**Agitator** for Viscous Liquids Having Shaft-Mounted Paddles, Circular Lid, Thermometer—Swift & Co., Chicago. No. 2,209,021.

**Control System** for Pumping Hams—Swift & Co., Chicago. Nos. 2,809,115, 2,812,705.

**Puffing Gun** for Cereal Products Consisting of Pressure Chamber Rotatable on Axial Shaft, Burner, Quick-Pressure-Release Mechanism — General Mills, Inc. No. 2,809,576.

**Fruit-Counting Unit** Having Chutes, Rotating Star Wheels, Article - Receiving Cavities, Counter — Fruit Equipment Service, Redlands, Calif. No 2,812,137.

**Gizzard Slitter and Washer**— N. B. Crane, Goldenrod and N. H. Dunn, Tampa, Fla. No. 2,812,540.

**Flake-Ice Machine** Consisting of Annular Evaporating Drum, Cylindrical Baffle, Refrigerant and Water Inlets, Ice Outlet— A. H. Newman, Lake Forest, Ill. No. 2,812,644.

**Box-Car Unloader** Comprising Retractable Carriage, Main Conveyor, Transverse Wing Conveyors—B. E. Anderson, Duluth, Minn. No. 2,812,867.

**Dough Mixer** With Rotating Platform, Receptacles, Stationary Blades—R. Gaertner, Moulton, Tex. No. 2,812,927.

## PACKAGING

**Milk-Can Cover** Having Toggle Mechanism for Engaging Rimmed Container Mouth— R. M. Harris, Corning, Calif. No. 2,808,959.

**Bottle Pourer** With Liquid-Catching Cup for Returning Drippings — H. Radtke, Toronto, Canada. No. 2,808,964.

**Container Cap** Employing Tines to Facilitate Discharge —P. G. DeSee, Hawthorne, N. J. No. 2,808,970.

**Reclosable Carton** Having Hinged Top Panel, Locking Tongue—National Biscuit Co., N.Y.C. No. 2,809,777.

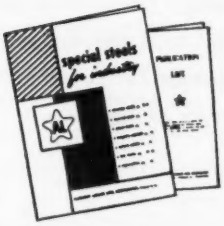
**Bun Package** With Central Partition, Transparent Wrapper, Closing Flaps—P. C. Pierson and L. J. Oliver, Chillicothe, Ohio. No. 2,809,896.

## *Dollars of* ***FIRST COST*** *aren't so big...*
## *if they're the* ***LAST COST***

First cost isn't everything! What really counts in most cases is not how much a thing costs when new, but how long it lasts; how *little* it actually costs when reckoned in terms of extra years of service.

That is where AL Stainless jumps to the head of the class. Stainless steel is a package of built-in advantages you just can't match anywhere else. No other commercial material is at once as hard, strong and lastingly beautiful — as resistant to heat, wear and corrosion — as easy and inexpensive to clean and maintain.

To top it off, AL Stainless is easy to fabricate, and we produce it in every shape or form a fabricator may require. Check up on its money-making possibilities for *you*, either in your products or your equipment, *and let us help!* ● ***Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.***




**WRITE TODAY**
**For These Publications**

**1.** SPECIAL STEELS FOR INDUSTRY . . . 16 pages of essential data on the proper selection and application of principal AL special alloy products: stainless, tool and electrical steels and sintered carbides.

**2.** PUBLICATION LIST . . . a complete listing of all AL publications, both technical and nontechnical (over 100 in all), with a handy order form for your convenience.

**ADDRESS DEPT. FE-1**

W&D 5483 B

**Make it BETTER-and LONGER LASTING-with**

# AL Stainless Steel

**Warehouse stocks carried by all Ryerson Steel plants**

AL ALLEGHENY LUDLUM



For more data, circle this page number on card at back →

# NOW 3 SUPERIOR CORN SYRUP SOLIDS

## carry the OK BRAND of QUALITY

1. OK DRI-SWEET 42 D.E.—(Granulated)
2. OK DRI-SWEET 42 D.E.—(Powdered)
3. OK DRI-SWEET Low D.E.—(Powdered)

## for Better Conditioned, Finer Flavored Foods

OK DRI-SWEET 42 D.E. (GRANULATED) is especially suitable for seasoning comminuted luncheon meats, smoked, cured and preserved meats. It is colorless, reduces watering off, cuts shrinkage, improves texture, is a better binding agent and can be used in greater quantity for maximum fill.

But, whether you produce prepared meat products, dry food mixes, frozen foods, ice creams, soup mixes . . . if you want finer flavor, better texture, controlled moisture, increased solids, and improved shelf life . . . *if you want quality at no extra cost* . . . you can get it with the OK BRAND DRI-SWEET Corn Syrup Solids. In fact, *only* OK DRI-SWEET Corn Syrup Solids provide a combination of *so many advantages in a single conditioner-seasoner.*

**Write today for detailed data on how OK DRI-SWEET Corn Syrup Solids can help you improve your production, or phone for a Hubinger Food Products Technician. You'll find him and the Hubinger Customer Research Service OK too.**

HUBINGER — QUALITY PRODUCTS — 77 YEARS — From CORN

# The Hubinger Company

**KEOKUK, IOWA**

**NEW YORK • CHICAGO • LOS ANGELES • BOSTON • CHARLOTTE • PHILADELPHIA**

# EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executives, management, technical, selling, office, skilled, manual, etc.

**Positions Vacant**
**Positions Wanted**
**Part Time Work**
**Civil Service Opportunities**
**Selling Opportunities Wanted**
**Selling Opportunities Offered**
**Employment Agencies**
**Employment Services**
**Labor Bureaus**

**DISPLAYED** ——**RATES**—— **UNDISPLAYED**

The advertising rate is $37.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$1.80 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Positions Wanted—The rate is one-half of the above, payable in advance.
Box Numbers—counts as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

Send NEW ADS or Inquiries to Classified Advertising Division of FOOD ENGINEERING, P. O. Box 12, N. Y. 36, N. Y.
February issue closes January 24th.

## QUALITY CONTROL MANAGER

Graduate Chemist or Chemical Engineer, ten years experience supervising quality control in food processing industry. Experience should include laboratory control testing, training of personnel, and raw materials purchasing and testing.

Company rapidly expanding nationally, excellent opportunity. Send resume of qualifications, experience and salary requirement.

P-6945, Food Engineering
520 N. Michigan Ave., Chicago 11, Ill.

## WE NEED

**FOOD TECHNOLOGISTS and FOOD CANNING CANDIDATES**
**—junior to top-level**

Call, write or wire:
**Gladys Hunting (Consultant)**
**Drake Personnel, Inc.**
220 S. State St., Chicago 4, Ill.
HArrison 7-8600

## FOR RATES OR INFORMATION

**About Classified Advertising**

*Contact*
*The McGraw-Hill Office*
*Nearest You*

ATLANTA, 3—1301 Rhodes-Haverty Bldg.
R. POWELL *JAckson 3-6951*
BOSTON, 16—350 Park Square
J. WARTH *HUbbard 2-7160*
CHICAGO, 11—530 No. Michigan Ave.
W. HIGGENS *MOhawk 4-5800*
CINCINNATI, 37—2005 Seymour Ave.
F. X. ROBERTS *ELmhurst 1-4150*
CLEVELAND, 3—1164 Illuminating Bldg.
R. YOCOM
CLEVELAND, 15—1510 Hanna Bldg.
W. SULLIVAN *SUperior 1-7000*
DALLAS, 2—1712 Commerce St., Vaughn Bldg.
G. MILLER *Riverside 7-5117*
DENVER, 2—1740 Broadway, Mile High Center
J. PATTEN *ALpine 5-2981*
DETROIT, 26—856 Penobscot Bldg.
J. GRANT *WOodward 2-1793*
LOS ANGELES, 17—1125 W. 6th St.
*MAdison 6-9351*
NEW YORK, 36—500 Fifth Ave.
R. OBENOUR D. COSTER R. LAWLESS
*OXford 5-5959*
PHILADELPHIA, 3—17th & Sansom St.
R. EDSALL H. BOZARTH
*RIttenhouse 6-0670*
ST. LOUIS, 8—3615 Olive St.
F. HOLLAND *JEfferson 5-4867*
SAN FRANCISCO, 4—68 Post St.
W. WOOLSTON *DOuglas 2-4600*

## FOOD CHEMIST

With lab. experience, preferably in baking industry. Responsibilities include analysis of ingredients, finished product, and bacteriological. Working directly with our nationally known director or research, help develop new products, work in new, modernly equipped laboratory. Chicago location. Terrific opportunity with a financially sound, progressive company. Give employment history, education. Salary open.

P-6889, Food Engineering
520 N. Michigan Ave., Chicago 11, Ill.

*REPLIES (Box No.): Address to office nearest you*
*c/o This publication Classified Adv. Div.*
*NEW YORK: P. O. Box 12 (36)*
*CHICAGO: 520 N. Michigan Ave. (11)*
*SAN FRANCISCO: 68 Post St. (4)*

### *SELLING OPPORTUNITY OFFERED*

**Salesmen's Opportunity—Calling on meat** packers to sell full line of seasonings and chemical specialty items. Excellent chance for aggressive, technically competent man to learn and earn well. We are a well established firm with progressive ideas. Apply by mail confidentially. Texas-Oklahoma and several other territories now open. Our salesmen know of this ad. SW-6818, Food Engineering.

### *EMPLOYMENT SERVICE*

**Salaried Personnel. $5,000-$30,000. This** confidential service established 1927 is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. F., P. O. Box 674, Manchester, Vermont.

### *POSITIONS WANTED*

**Food Technologist, strong in bacteriology.** Qualified in spray drying, canning, freezing. Available for technical director, product development, quality control. PW-6837, Food Engineering.

**Food Technologist. Graduate Chemist. Desires** position of responsibility and authority in progressive food manufacturing organization as head of small research, development, and quality control laboratory. Experience in drugs, food specialties, and meat packing. Free to relocate or travel. Salary: as much as you want to pay to get the job done. Send only complete details to: PW-6913, Food Engineering.

**Experienced Plant Manager seeking position** in a dairy or food organization which would offer broader opportunities. Five years management experience. M. S. degree in dairy. Family man, age 36. Present location close to Chicago. PW-6927, Food Engineering.

**Plant manager in dairy products, foods, and** allied lines seeks new situation. Unusual record of accomplishment. Wide experience and formal training background. Only challenging position with growth opportunities will be considered. PW-6777, Food Engineering.

## Fast growing, nationally established, food processor has opening for the following:

**Food Technologist**—Graduate. Position covers all phases product development and process control.

**Purchasing agent**—Minimum three years experience in the food industry.

**Maintenance Mechanic** — Familiar with food processing equipment.

*Replies strictly confidential.*

**CHUN KING**
P.O. Box 206, Duluth, Minnesota

## FOOD CHEMIST—TECHNOLOGIST FOR ATTRACTIVE SALES POSITION

Well established, rapidly expanding firm needs an energetic, intelligent and ambitious man to sell food additives, gums, etc. Work out of Metropolitan New York Office and cover ½ East Coast. Salary, expenses and liberal commission. Outstanding opportunity for right man. Send resume to:

P-6861, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

## FOOD TECHNOLOGIST or CHEMIST

for product development work leading to a technical sales position. Laboratory is located in Norwalk, Connecticut. Experience with baked products desirable but not essential. Replies will be held in strict confidence. Please send complete resume to:

**R. T. VANDERBILT CO., INC**
Foods Department
230 Park Av., New York 17, N. Y.

## CHEMIST OR CHEMICAL ENGINEER

Good opportunity with long established food confections processor. Ten years experience or more preferred processing analytical quality control and research. Please reply in detail with the understanding that all correspondence will be strictly confidential.

P-6621, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

# CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

BUSINESS OPPORTUNITIES — EQUIPMENT - USED or RESALE

**DISPLAYED RATE:**

The advertising rate is $16.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

**UNDISPLAYED RATE:**

$1.80 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

PROPOSALS, $1.80 a line an insertion.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

*Send NEW Ads or Inquiries to Classified Adv. Div. of Food Engineering, P. O. Box 12, N. Y. 36, N. Y., for February issue closing January 24th*

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## Partial Listing BREWERY LIQUIDATION Immediate Delivery

9—Stainless Steel Horz. Tanks 10,850 gal. each also 3 Glass lined

1—Stainless Steel Jacketed Cooker 7,750 gal.; New 1956

1—Stainless Steel Rectangular Kettle 18,600 gal. capacity with Stainless heating coils

350—Welded Steel Tanks 3,000-15,000 gal. each

1—Stainless Steel Niagara Filter & Slurry; 370 sq. ft. New 1950

ALSO—Malt Mills, Dryers, Pasteurizers, Labellers, Packaging Equipment, Etc.

*Write* Mr. Frank Boitz

**HYDE PARK BREWERY**
3607 N. Florissant St.
St. Louis, Missouri

*Phone* GArfield 1-2204 or 1-6246

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## FORT PITT BREWERY CLOSED

**Sharpsburg Plant of Fort Pitt Brewery, annual cap. 600,000 bbls. closed in November; available for immediate delivery is this complete plant, including:**

16 A. O. Smith one-piece glass-lined tanks totaling 150,000 gals., stainless coolers, cookers and kettles, Enzinger stainless diatomaceous earth filter with open feeder; 23 stainless riveted leaves; CO2 storage tanks for 250 psi; copper double-pipe coolers; refrigeration compressors and individual room coolers; 49 rectangular glass-lined tanks totaling 650,000 gals; 85 other tanks from 1500 gals. to 12,000 gals; 17 vertical wood tanks, 10'8" x 11'8"; G.E. AC generator; I-R horizontal air compressor; bottle washers, rinsers, labelers, fillers, packers; 7500 ft. practically new case conveyor with AC motor drives; over $3,550,000 worth of practically new equipment for you.

*Write for details and complete listing to:*

**FORT PITT BREWERY**
SHARPSBURG (PITTSBURGH), PA.

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Liquidation

## TRENTON CHEMICAL CO.

TRENTON, MICHIGAN

1—Swenson Quadruple Effect forced circulation Evaporator 12,975 sq. ft.
1—Arnold 6′ dia. 316 S.S. Evaporator 325 sq. ft.
1—Harris 3′ dia. 316 S.S. Evaporator.
3—American 42″x120″ double drum dryers.
3—Louisville 6′ dia. x 50′ rotary steam tube dryers.
2—AT&M 42″ suspended, 304 S.S. Centrifugals.
2—Tolhurst 42″ suspended, steel Centrifugals.
36—Centrifugal & Rotary Pumps, Stainless, Olivite, Haveg & Iron, 1½″ to 4″.

Write or phone for detailed circular. Representative on premises.

**BRILL EQUIPMENT COMPANY**
2401 Third Ave., New York 51, N. Y.
*Cypress 2-5703*
or
603 Harrison Ave., Trenton, Michigan
*Orleans 6-5110*

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*FOR SALE*

**1—PATTERSON KELLY 30 cu. ft. Stainless Steel Twin Shell Blender**
With 3 H.P. Explosion Proof Motor—Used only three weeks.
FREUND BAKING COMPANY
920 South Taylor Ave., St. Louis 10, Missouri
*Ph FR 1-1282*

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*REPLIES (Box No.): Address to office nearest you*
*c/o This publication Classified Adv. Div.*
*NEW YORK: P. O. Box 12 (36)*
*CHICAGO: 520 N. Michigan Ave. (11)*
*SAN FRANCISCO: 68 Post St. (4)*

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*SPECIAL SERVICES*

**Laboratory Equipment Repair Co., 1810 W.** Ogden, Chgo 12, Ill. Fast 24 Hour Service.

**Rebuild those leaking valves!! Sanitary** valves rebuilt for a fraction of the cost of a new valve. Prices submitted on request. Stuart W. Johnson & Co., 611 Main Street, Lake Geneva, Wis.

**Instrument Repair. Temperature regulators,** mercurial indicating thermometers and recording thermometers of all makes repaired. Complete satisfaction guaranteed. Stuart W. Johnson & Co., 611 Main Street, Lake Geneva, Wis.

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*FOR LEASE*

**For Lease—Complete vegetable and strawberry** processing plant, and other modern processing machinery, including Package Machinery Corp. automatic wrapping machine, all housed in modern building located in center of industrial section of Central Arkansas. Quick Freezing Plant with 40 Tons daily capacity at —30°, and Cold Storage Warehouse with capacity of 300,000 cubic feet located on property and available for use, Railroad siding and truck dock available. For details write FL-6424, Food Engineering.

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## BARGAINS FOR SALE

The Ruderman Machinery Exchange of Gouverneur, N. Y., one of the largest diversified Machinery & Equipment Dealers in America, can furnish you with practically all your needs in Modern Ice Cream, Milk Plant and Electrical Equipment at but a fraction of the original cost.

WRITE—WIRE—PHONE FOR YOUR NEEDS

**RUDERMAN MACHINERY EXCHANGE**
Gouverneur, New York Telephone: 333-334

---

*FOR SALE—Complete*

## RED TOP BREWERY, CINCINNATI

**Ceased Operations November**

Including glass-lined tanks, diatomaceous earth filters, stainless; bottling machinery, B & W boilers, hundreds of Lastiglas-lined tanks; air compressors; generators; copper kettles and cookers; coolers, APV Paraflow stainless heat exchangers.

This plant reopened two years ago at a rehabilitation cost of $250,000. Now everything must be sold at tremendous bargain; inspection invited, complete details by writing to:

**RED TOP BREWERY**
242 West McMichen St., Plant #2
Cincinnati, Ohio

---

FOR SALE

1—FMC Continuous Abrasive Peeler
1—Mercury Electric Truck, 2 ton lift
1—40 Gallon S.S. Jacketed Kettle
1—CRCO Model 600 Filler
1—21 pocket Pfaudler Rotary Piston Filler
1—Continental #10 Can Opener
1—Continental 24 valve S.S. Juice Filler

**ALARD INDUSTRIES INC.**
Post Office Box 367 Williamson, N. Y.

# EXCEPTIONAL OFFERING!

**Just Secured From Prominent Food Plant on West Coast**

## HIGHLY DESIRABLE MACHINERY

*Immediate Deliveries* *Inspection Invited*

2—Pneumatic Scale Co. Cartoning Units consisting of Automatic Carton Feeders, Bottom Sealers and Top Sealers.

4—Scandia Practically New Automatic Cellophane Wrappers, Model SFS-6F, with Electric Eyes.

1—Hayssen Model 10—20 Wrapper with Electric Eye.

4—Jacketed Copper Coating Pans, 24" x 40" x 40".

4—Fitzpatrick Stainless Steel Comminuters with 7½ HP motors and with Vibrator Feeders.

1—Mikro Pulverizer with 40 HP motor and complete auxiliary equipment.

1—J. H. Day Mixer with ribbon and wire Agitators and 5 HP motors, 500 lb. cap.

2—J. H. Day Mixers with ribbon and wire Agitators and 20 HP motors measuring 96" x 36" x 40".

*Write, Wire, Phone For Complete Details and Prices*

**UNION STANDARD EQUIPMENT CO.**

318-322 Lafayette St., New York 12, N. Y.

*Phone: Canal 6-5333*

---

**FOR SALE**

38" Copper Coating Pans with stem coils
300 gal. Copper Still with condenser and tank
100 qt. 3 speed Read Master Mixer
80 qt. M-80-4 speed Hobart Mixer
100 gal. Copper Steam Jacketed Mixing Kettle
York Freon Compressor with 1½ HP 3 phase motor
Burns Split Nut Peanut Blancher

**SAVAGE BROS. CO.**

2636 Gladys Ave. Chicago 12, Ill.

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# MAKE FIRST YOUR FIRST STOP AFTER the SHOW!

# SEE MORE AVAILABLE EQUIPMENT HERE.

Buflovak Flaker or Dryer in 316 S/S 4' x 5' complete with accessories.
3 Stainless Drying Drums 5' x 4'.
American Dbl. Door Sterilizers sizes up to 36" x 42" x 84".
NEW FALCON Stainless Ribbon Blenders; 86 cu. ft.; 40 cu. ft.
2 Mojonnier Stainless Steel Vacuum Pans; 6' x 12' & 3' x 10'.
2 Stainless Steel 5000 Gal. Heavy Duty Mixing Tanks.
Sharples Stainless Steel C27 Super-D-Hydrator; 30 HP XPL.
Bird Continuous Centrifugal Filter in Stainless; 18" x 28".
Aluminum 5000 Gal. ASME coded Pressure Tanks; 8' x 12'; manhole type.
Two A. O. Smith Stainless Lined Pressure Tanks; 10' x 18'7".
Four Stainless Hor. Tanks; 6' x 34', 3/16" thick shell; manhole type.
Stainless Truck Type Tank; oval 4'H x 6'w. x 21' long; insulated.
Standard Knapp Top & Bot. Aut. Gluer and Sealer Model 429.
Stokes & Smith Powder Fillers.
Kiefer Rotary Vacuum Fillers.
Kiefer 2 Stream Vari Visco Filler.
Labelers by Standard Knapp, Kyler, Burt, New Jersey, World Automatic.
Cappers by Pneumatic Scale, Capem, Resina—fully automatic.
Sifters by Rotex, J. H. Day, Patterson, Robinson, Selectro and others.
Hammer Mills up to 150 HP operation by Williams, Gruendler, Mikro etc.
Stainless Steel Homogenizers, Colloid Mills, Viscolizers all types.

*SEND US YOUR LIST OF SURPLUS EQUIPMENT*

**FIRST MACHINERY CORP.**

**209-289 TENTH STREET, BROOKLYN 15, N. Y.**

FRED FIRSTENBERG *President*

**ST. 8-4672**

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# WINTER SPECIALS

## HARD TO GET ITEMS

Container Fillers, Canco #15 #334; Plunge Type Fillers, Hope & Bagby; Milk Bottle Fillers, Cemac 14, 28; Cherry-Burrell GV-10, 16, 20; 1,000 and 3,000 gallon S.S. Milk Storage Tanks; 300 gallon Pasteurizers, Pfaudler, Creamery Package and Oakes & Burger; Creamery Package all Stainless Steel, H.T.S.T. 7,000#, York 10,000#. Many other items. Send us your inquiries. What do you have for sale? WE FLY TO BUY.

**LESTER KEHOE MACHINERY CORP.**

23 Congress St.—P.O. Box 82
Staten Island 4, N. Y. Gibraltar 7-3410

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# FOR SALE

York Plate Heat Exchanger Pasteurizer with Taylor controls—practically new.....$3000.
2—90'x32" Buflovac roller drier.....2500. (These driers in good condition, complete with S.S. stacks up through roof)
5 H.P. York Self Contained ammonia refrigerating unit..... 500.
Wickes 125 H.P. water tube boilers, Ray Horizontal Rotary oil burner system, including approx. 50' stack.....7500.
5—600 gallon C.P. vats. Good condition.
Many other pieces of dairy equipment. Please write for list.

*Address inquiries to:*—A. E. GROTH

**DARIGOLD PLANT**

P. O. Box 157 Bellingham, Wash.

---

## GO WEST FOR THE BEST

★ 1—A-B 2-2½ Cooker and Cooler, 2000 cans ★
1—A-B 2-2½ 20 Valve Syruper
★ 1—FMC Juice Processor, S.S. 4 unit flg 4500 ★
1—Std. Knapp Model F Caser, 211 size cans
4—Std. Knapp Model F Casers, 6 oz.-#1-#2
★ 1—1500 gal Stainless Steel Tank ★
2—250 gal Lee S. S. Kettles, 100# jkt press
★ 2—Groen Model RA 60 gal S.S. Kettles ★
3—Lee 100 gal S.S. agitated Kettles
1—Canco 08 Seamer, set for 46 oz. Rebuilt
★ 1—Canco 400 Seamer, 401 diameter cans ★
1—Canco 400 Seamer, 211 diameter cans
1—Canco 400 Seamer, 300 diameter cans
★ 1—Elgin Twin Piston S.S. Filler, qt piston ★
1—Elgin 18 piston S.S. Rot. Filler, Comp.
★ 1—M & S #10 Filler, 6 piston br contact ★
1—M & S 9 piston Filler, brass contact
1—Resina auto single head Capper, 28, 38 mm
★ 1—Kyler 8 ounce-2½ adjustable Labeler ★
1—Stokeswrap Model BS, liquid or solid
2—FMC Model 100 Pulpers, 20 HP
★ 2—Zenith Model 2 L S.S. Presses, 20 HP ★
1—Cleveland #7 Kleen-Kut Meat Grinder
1—Rietz RD-12 Stainless Disintegrator, 25 HP
★ 2—6½' x 45' Rotary Dryers, ½" shell, hvy ★
3—Tyler-Hummer 3' x 5' single deck Screens
1—A T & M 42" S.S. susp. Centrifuge, perf
★ 1—3' x 2' Oliver Rotary cont. Vac. Filter ★

**GOOD USED EQUIPMENT**

MACHINERY AND EQUIPMENT COMPANY — GO WEST

514 Bryant Street • San Francisco 7, Calif.

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## FOR SALE

2—Pneu. Scale 6 head capper, 53 mm.
3—Fitzpatrick Comminutors, St. St., models D, F.
2—Filler Machine Co., 4 cyl. St. St., piston fillers.
5—Sparkler #33-S-28 Filters, Steel Body, St. St. plates.
4—Double Drum Dryers: 42" x 100", 42" x 120", 32" x 72".
1—UNUSED Buflovac 5' x 12" Single Drum Vacuum Dryer.
3—St. St. Vac. Shelf Dryers, 100 sq. ft.
1—Buflovac #6.5 St. St. Double Effect Evaporator, 588 sq. ft.
1—Stokes Type 316 St. St. Double Effect Evaporator, 250 GPH.
2—Flakers, Buffalo 32" x 90".
4—Mixers St. St. Double Arm, 5, 50, 75 gal., sigma blade; jacketed.
2—3,000 gal. St. St. Vacuum Tanks with coils (Rogers 6' dia. Vac. Pans).
30—Stainless Steel Tanks—30 gal. to 10,000 gal. sizes. NEW & USED.
75—Welded Steel Tanks—Brewery lining, 4,000 gal. to 10,000 gal.

**PERRY EQUIPMENT Corp.**

1411 N. 6th St. Phila. 22, Pa.

*POplar 3-3505*

## IN STOCK AT LOEB'S . . . .

Cappers: automatic and semi-automatic.
Centrifugals: Fletcher 12" copper, 17" stainless, 29" lithcoated, Tolhurst 26" rubber.
Clarifiers: De Laval and Sharples.
Dryers: Link Belt MonoTube, monel.
Dryer: Devine 2 x 4' vac. drum, st. steel.
Dryer: Bowen lab. spray, st. steel.
Dryer: Direct Heat 4' x 20'.
Dryer: Nordyke-Marmon 120 hu.
Fillers, liquid: vacuum, siphon, gravity.
Fillers, piston: Stokes, Colton, Elgin, Filler Machine Co. for jars, tubes.
Fillers: M & S for cans 6 and 10 pocket, st. st.
Fillers, powder: Speedee, Triangle, Stokes & Smith, Ferguson, Gamp.
Filter Presses: Sperry, Shriver 6"-36", recessed and plate and frames types.
Filters: Int. pressure—Alsop, Sparkler, Lomax, Sweetland with 30 24" st. st. leaves.
Filter, vacuum: Oliver 2" x 1'.
Homogenizers: Manton-Gaulin 25 GPH., 60 GPH., 300 GPH., Flowmaster model 200.
Kettles: Dopp 150 gal., jkt. agitated.
Kettles, Stainless steel: 20 to 500 gal., with and without agitators.
Labelers: Burt, Knapp, New Jersey, World.
Mills, hammer: Mikro, Gump, Prater, Raymond, Jay Bee, Jeffrey, Williams, Fitzpatrick.
Mills, colloid: Charlotte 20 hp., 1 hp.
Mixers, dough type: single and double arm.
Glen Power Plus 340 qt., 5 hp.
Powder: 50 to 2000 lb. capacity.
Gemco 5' x 14', stain. steel, 40 cu. ft. cap.
Day high speed, 40 hp.
Muller: Simpson 39½" type 316 s.s. bowl.
Percolators: Pfaudler 54 x 42" stain. steel.
Pumps: Centrifugal, rotary, gear, vacuum.
Sealers: Ferguson, Triangle, Ceco, ABC.
Separator: De Laval, Nozle-Matic AC VO.
Tablet Presses: Single punch and rotary.
Tanks: Stain. steel 25 gal. to 1200 gal.
Tank: St. Steel 2000 gal. type 316, jack.

JUST RECEIVED FROM A CREAMERY:
Vacuum Pan: 42" Harris, st. steel.
Clarifier: De Laval model AD-RO.
Super Centrifuge: Sharples st. steel.
Wrapper: Globe-Knapp for butter.

*Send us your inquiries and list of idle equipment*

**LOEB EQUIPMENT SUPPLY CO.**
820 WEST SUPERIOR ST. • TELEPHONE SEeley 8-1431 CHICAGO 22, ILLINOIS

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## LATE MODEL PACKAGE MACHINERY

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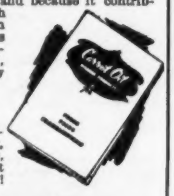


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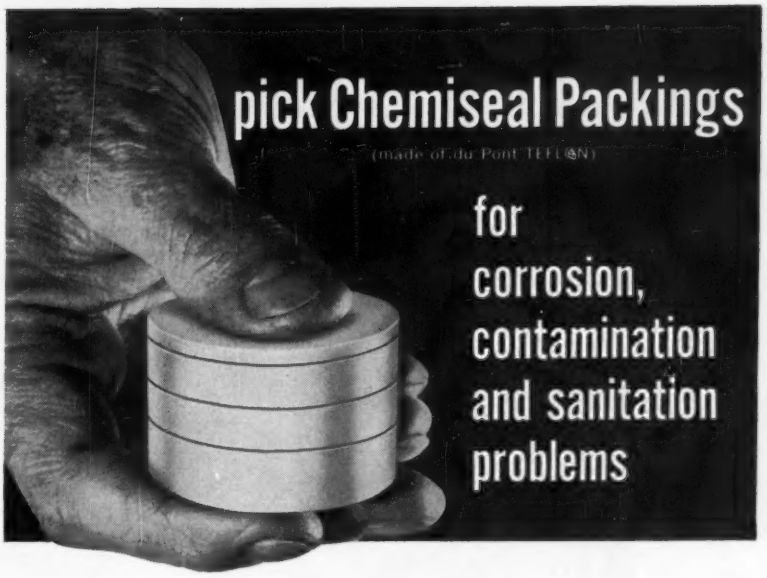


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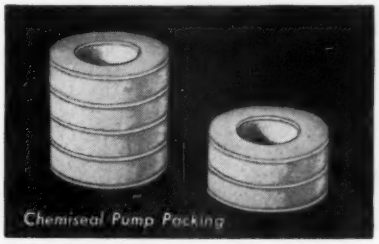
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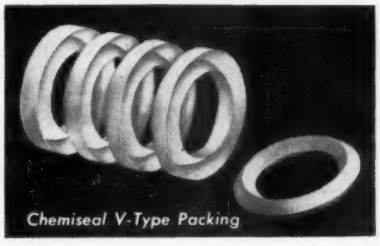
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## PACKAGING PROBLEM:

Among the many products of Carnation Company, Los Angeles, is Instant Non-fat Dry Milk. The firm had been packaging this product in polyethylene-lined drums at a cost of about $4.50 per 100 pounds of instant milk. What Carnation desired was a more economical method of packaging their instant milk for the institutional market that would also permit close portion control and offer additional conveniences to the user.

*Increased Sales . . . by Design!*

## SOLUTION:

Western-Waxide's Product Development Department, working closely with its Packaging Research and Development Laboratory and food technologists, arrived at this solution: a bag measuring 7" x 4" x 19½" was determined to be the best size for institutional portion control. It holds five pounds of dried milk—enough to make five gallons. The bag had to be sturdy and tests showed that kraft paper, laminated to .00035" foil with polyethylene coating over the foil combined the necessary strength with excellent water vapor barrier characteristics. The back seam and the double fold bottom are heat sealed—exceptionally strong as well as dust- and water vapor-proof. The combination is also a barrier to insects and vermin. Gusset sides permit easy filling, the top is heat sealed, and the bags are packed eight to the carton (40 pounds) providing a very economical packaging operation. A saving of up to 42% per 100 pounds of dried milk has been realized over the old drum-and-liner method.

●

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